

S5.1.2 If the seat back and the seat bench are attached to the vehicle by different attachments, attach to each component a fixture capable of transmitting a force to that component. Apply forces, in newtons, equal to 20 times the mass of the seat in kilograms multiplied by 9.8 horizontally through the center of gravity of the seat back, as shown in Figure 2 and apply forces, in newtons, equal to 20 times the mass of the seat in kilograms multiplied by 9.8 horizontally through the center of gravity of the seat bench, as shown in Figure 3.

§ 571.208 Standard No. 208; Occupant crash protection.

S1. *Scope.* This standard specifies performance requirements for the protection of vehicle occupants in crashes.

S2. *Purpose.* The purpose of this standard is to reduce the number of deaths of vehicle occupants, and the severity of injuries, by specifying vehicle crashworthiness requirements in terms of forces and accelerations measured on anthropomorphic dummies in test crashes, and by specifying equipment requirements for active and passive restraint systems.

S3. *Application.* This standard applies to passenger cars, multipurpose passenger vehicles, trucks, and buses. In addition, S9, *Pressure vessels and explosive devices*, applies to vessels designed to contain a pressurized fluid or gas, and to explosive devices, for use in the above types of motor vehicles as part of a system designed to provide protection to occupants in the event of a crash. Notwithstanding any language to the contrary, any vehicle manufactured after March 19, 1997 and before September 1, 2001 that is subject to a dynamic crash test requirement conducted with unbelted dummies may meet the requirements specified in S13 instead of the applicable unbelted requirement. Compliance with S13 shall, for purposes of Standards No. 201, 203 and 209, be deemed as compliance with the unbelted frontal barrier requirements of S5.1 of this section.

S4. General requirements.

S4.1 Passenger cars.

S4.1.1 *Passenger cars manufactured from January 1, 1972, to August 31, 1973.* Each passenger car manufactured from January 1, 1972, to August 31, 1973, inclusive, shall meet the requirements of S4.1.1.1, S4.1.1.2, or S4.1.1.3. A protection system that meets the require-

ments of S4.1.1.1, or S4.1.1.2 may be installed at one or more designated seating positions of a vehicle that otherwise meets the requirements of S4.1.1.3.

S4.1.1.1 *First option—complete passive protection system.* The vehicle shall meet the crash protection requirements of S5. by means that require no action by vehicle occupants.

S4.1.1.2 *Second option—lap belt protection system with belt warning.* The vehicle shall—

(a) At each designated seating position have a Type 1 seatbelt assembly or a Type 2 seatbelt assembly with a detachable upper torso portion that conforms to S7.1 and S7.2 of this standard;

(b) At each front outboard designated seating position, have a seat belt warning system that conforms to S7.3; and

(c) Meet the frontal crash protection requirements of S5.1, in a perpendicular impact, with respect to anthropomorphic test devices in each front outboard designated seating position restrained only by Type 1 seat belt assemblies.

S4.1.1.3 *Third option—lap and shoulder belt protection system with belt warning.*

S4.1.1.3.1 Except for convertibles and open-body vehicles, the vehicle shall—

(a) At each front outboard designated seating position have a Type 2 seatbelt assembly that conforms to § 571.209 and S7.1 and S7.2 of this standard, with either an integral or detachable upper torso portion, and a seatbelt warning system that conforms to S7.3;

(b) At each designated seating position other than the front outboard positions, have a Type 1 or Type 2 seat belt assembly that conforms to § 571.209 and to S7.1 and S7.2 of this standard; and

(c) When it perpendicularly impacts a fixed collision barrier, while moving longitudinally forward at any speed up to and including 30 m.p.h., under the test conditions of S8.1 with anthropomorphic test devices at each front outboard position restrained by Type 2 seatbelt assemblies, experience no complete separation of any load-bearing element of a seatbelt assembly or anchorage.

S4.1.1.3.2 Convertibles and open-body type vehicles shall at each designated seating position have a Type 1 or Type 2 seatbelt assembly that conforms to § 571.209 and to S7.1 and S7.2 of this standard, and at each front outboard designated seating position have a seatbelt warning system that conforms to S7.3.

S4.1.2 *Passenger cars manufactured on or after September 1, 1973, and before September 1, 1986.* Each passenger car manufactured on or after September 1, 1973, and before September 1, 1986, shall meet the requirements of S4.1.2.1, S4.1.2.2 or S4.1.2.3. A protection system that meets the requirements of S4.1.2.1 or S4.1.2.2 may be installed at one or more designated seating positions of a vehicle that otherwise meets the requirements of S4.1.2.3.

S4.1.2.1 *First option—frontal/angular automatic protection system. The vehicle shall:*

(a) At each front outboard designated seating position meet the frontal crash protection requirements of S5.1 by means that require no action by vehicle occupants;

(b) At the front center designated seating position and at each rear designated seating position have a Type 1 or Type 2 seat belt assembly that conforms to Standard No. 209 and to S7.1 and S7.2; and

(c) *Either.* (1) Meet the lateral crash protection requirements of S5.2 and the rollover crash protection requirements of S5.3 by means that require no action by vehicle occupants; or

(2) At each front outboard designated seating position have a Type 1 or Type 2 seat belt assembly that conforms to Standard No. 209 and S7.1 through S7.3, and that meets the requirements of S5.1 with front test dummies as required by S5.1, restrained by the Type 1 or Type 2 seat belt assembly (or the pelvic portion of any Type 2 seat belt assembly which has a detachable upper torso belt) in addition to the means that require no action by the vehicle occupant.

S4.1.2.2 *Second option—head-on automatic protection system. The vehicle shall—*

(a) At each designated seating position have a Type 1 seat belt assembly or Type 2 seat belt assembly with a de-

tachable upper torso portion that conforms to S7.1 and S7.2 of this standard.

(b) At each front outboard designated seating position, meet the frontal crash protection requirements of S5.1, in a perpendicular impact, by means that require no action by vehicle occupants;

(c) At each front outboard designated seating position, meet the frontal crash protection requirements of S5.1, in a perpendicular impact, with a test device restrained by a Type 1 seat belt assembly; and

(d) At each front outboard designated seating position, have a seat belt warning system that conforms to S7.3.

S4.1.2.3 *Third option—lap and shoulder belt protection system with belt warning.*

S4.1.2.3.1 Except for convertibles and open-body vehicles, the vehicle shall—

(a) At each front outboard designated seating position have a seat belt assembly that conforms to S7.1 and S7.2 of this standard, and a seat belt warning system that conforms to S7.3. The belt assembly shall be either a Type 2 seat belt assembly with a nondetachable shoulder belt that conforms to Standard No. 209 (§ 571.209), or a Type 1 seat belt assembly such that with a test device restrained by the assembly the vehicle meets the frontal crash protection requirements of S5.1 in a perpendicular impact.

(b) At any center front designated seating position, have a Type 1 or Type 2 seat belt assembly that conforms to Standard No. 209 (§ 571.209) and to S7.1 and S7.2 of this standard, and a seat belt warning system that conforms to S7.3; and

(c) At each other designated seating position, have a Type 1 or Type 2 seat belt assembly that conforms to Standard No. 209 (§ 571.209) and S7.1 and S7.2 of this standard.

S4.1.2.3.2 Convertibles and open-body type vehicles shall at each designated seating position have a Type 1 or Type 2 seat belt assembly that conforms to Standard No. 209 (§ 571.209) and to S7.1 and S7.2 of this standard, and at each front designated seating position have a seat belt warning system that conforms to S7.3.

S4.1.3 Passenger cars manufactured on or after September 1, 1986, and before September 1, 1989.

S4.1.3.1 Passenger cars manufactured on or after September 1, 1986, and before September 1, 1987.

S4.1.3.1.1 Subject to S4.1.3.1.2 and S4.1.3.4, each passenger car manufactured on or after September 1, 1986, and before September 1, 1987, shall comply with the requirements of S4.1.2.1, S4.1.2.2 or S4.1.2.3. A vehicle shall not be deemed to be in noncompliance with this standard if its manufacturer establishes that it did not have reason to know in the exercise of due care that such vehicle is not in conformity with the requirement of this standard.

S4.1.3.1.2 Subject to S4.1.3.4 and S4.1.5, the amount of passenger cars, specified in S4.1.3.1.1 complying with the requirements of S4.1.2.1 shall be not less than 10 percent of:

(a) The average annual production of passenger cars manufactured on or after September 1, 1983, and before September 1, 1986, by each manufacturer, or

(b) The manufacturer's annual production of passenger cars during the period specified in S4.1.3.1.1.

S4.1.3.1.3 A manufacturer may exclude convertibles which do not comply with the requirements of S4.1.2.1, when it is calculating its average annual production under S4.1.3.1.2(a) or its annual production under S4.1.3.1.2(b).

S4.1.3.2 Passenger cars manufactured on or after September 1, 1987, and before September 1, 1988.

S4.1.3.2.1 Subject to S4.1.3.2.2 and S4.1.3.4, each passenger car manufactured on or after September 1, 1987, and before September 1, 1988, shall comply with the requirements of S4.1.2.1, S4.1.2.2 or S4.1.2.3. A vehicle shall not be deemed to be in noncompliance with this standard if its manufacturer establishes that it did not have reason to know in the exercise of due care that such vehicle is not in conformity with the requirement of this standard.

S4.1.3.2.2 Subject to S4.1.3.4 and S4.1.5, the amount of passenger cars specified in S4.1.3.2.1 complying with the requirements of S4.1.2.1 shall be not less than 25 percent of:

(a) The average annual production of passenger cars manufactured on or

after September 1, 1984, and before September 1, 1987, by each manufacturer, or

(b) The manufacturer's annual production of passenger cars during the period specified in S4.1.3.2.1.

S4.1.3.2.3 A manufacturer may exclude convertibles which do not comply with the requirements of S4.1.2.1, when it is calculating its average annual production under S4.1.3.2.2(a) or its annual production under S4.1.3.2.2(b).

S4.1.3.3 Passenger cars manufactured on or after September 1, 1988, and before September 1, 1989.

S4.1.3.3.1 Subject to S4.1.3.3.2 and S4.1.3.4, each passenger car manufactured on or after September 1, 1988, and before September 1, 1989, shall comply with the requirements of S4.1.2.1, S4.1.2.2 or S4.1.2.3. A vehicle shall not be deemed to be in noncompliance with this standard if its manufacturer establishes that it did not have reason to know in the exercise of due care that such vehicle is not in conformity with the requirement of this standard.

S4.1.3.3.2 Subject to S4.1.3.4 and S4.1.5, the amount of passenger cars specified in S4.1.3.3.1 complying with the requirements of S4.1.2.1 shall be not less than 40 percent of:

(a) The average annual production of passenger cars manufactured on or after September 1, 1985, and before September 1, 1988, by each manufacturer or

(b) The manufacturer's annual production of passenger cars during the period specified in S4.1.3.3.1.

S4.1.3.3.3 A manufacturer may exclude convertibles which do not comply with the requirements of S4.1.2.1, when it is calculating its average annual production under S4.1.3.3.2(a) or its annual production under S4.1.3.3.2(b).

S4.1.3.4 Calculation of complying passenger cars.

(a) For the purposes of calculating the numbers of cars manufactured under S4.1.3.1.2, S4.1.3.2.2, or S4.1.3.3.2 to comply with S4.1.2.1:

(i) Each car whose driver's seating position complies with the requirements of S4.1.2.1(a) by means not including any type of seat belt and whose front right seating position will comply with the requirements of S4.1.2.1(a) by any means is counted as 1.5 vehicles, and

(2) Each car whose driver's seating position complies with the requirements of S4.1.2.1(a) by means not including any type of seat belt and whose right front seat seating position is equipped with a manual Type 2 seat belt is counted as one vehicle.

(b) For the purposes of complying with S4.1.3.1.2, a passenger car may be counted if it:

(1) Is manufactured on or after September 1, 1985, but before September 1, 1986, and

(2) Complies with S4.1.2.1.

(c) For the purposes of complying with S4.1.3.2.2, a passenger car may be counted if it:

(1) Is manufactured on or after September 1, 1985, but before September 1, 1987,

(2) Complies with S4.1.2.1, and

(3) Is not counted toward compliance with S4.1.3.1.2

(d) For the purposes of complying with S4.1.3.3.2, a passenger car may be counted if it:

(1) Is manufactured on or after September 1, 1985, but before September 1, 1988,

(2) Complies with S4.1.2.1, and

(3) Is not counted toward compliance with S4.1.3.1.2 or S4.1.3.2.2.

S4.1.3.5 *Passenger cars produced by more than one manufacturer.*

S4.1.3.5.1 For the purposes of calculating average annual production of passenger cars for each manufacturer and the amount of passenger cars manufactured by each manufacturer under S4.1.3.1.2, S4.1.3.2.2 or S4.1.3.3.2, a passenger car produced by more than one manufacturer shall be attributed to a single manufacturer as follows, subject to S4.1.3.5.2:

(a) A passenger car which is imported shall be attributed to the importer.

(b) A passenger car manufactured in the United States by more than one manufacturer, one of which also markets the vehicle, shall be attributed to the manufacturer which markets the vehicle.

S4.1.3.5.2 A passenger car produced by more than one manufacturer shall be attributed to any one of the vehicle's manufacturers specified by an express written contract, reported to the National Highway Traffic Safety Administration under 49 CFR part 585, be-

tween the manufacturer so specified and the manufacturer to which the vehicle would otherwise be attributed under S4.1.3.5.1.

S4.1.4 Passenger cars manufactured on or after September 1, 1989, but before September 1, 1996.

S4.1.4.1 Except as provided in S4.1.4.2, each passenger car manufactured on or after September 1, 1989 shall comply with the requirements of S4.1.2.1. Any passenger car manufactured on or after September 1, 1989 and before September 1, 1993 whose driver's designated seating position complies with the requirements of S4.1.2.1(a) by means not including any type of seat belt and whose right front designated seating position is equipped with a manual Type 2 seat belt so that the seating position complies with the occupant crash protection requirements of S5.1, with the Type 2 seat belt assembly adjusted in accordance with S7.4.2, shall be counted as a vehicle complying with S4.1.2.1. A vehicle shall not be deemed to be in noncompliance with this standard if its manufacturer establishes that it did not know in the exercise of due care that such vehicle is not in conformity with this standard.

S4.1.4.2 (a) Each passenger car, other than a convertible, manufactured before December 11, 1989 may be equipped with, and each passenger car, other than a convertible, manufactured on or after December 11, 1989 and before September 1, 1990 shall be equipped with a Type 2 seat belt assembly at every forward-facing rear outboard designated seating position. Type 2 seat belt assemblies installed pursuant to this provision shall comply with Standard No. 209 (49 CFR 571.209) and with S7.1.1 of this standard.

(b) Except as provided in S4.1.4.2.1 and S4.1.4.2.2, each passenger car, other than a convertible, manufactured on or after September 1, 1990 and each convertible passenger car manufactured on or after September 1, 1991 shall be equipped with an integral Type 2 seat belt assembly at every forward-facing rear outboard designated seating position. Type 2 seat belt assemblies installed in compliance with this requirement shall comply with Standard No. 209 (49 CFR 571.209) and with S7.1 and S7.2 of this standard. If a Type 2 seat

belt assembly installed in compliance with this requirement incorporates any webbing tension-relieving device, the vehicle owner's manual shall include the information specified in S7.4.2(b) of this standard for the tension relieving device, and the vehicle shall comply with S7.4.2(c) of this standard.

(c) As used in this section, "rear outboard designated seating position" means any "outboard designated seating position" (as that term is defined at 49 CFR 571.3) that is rearward of the front seat(s), except any designated seating position adjacent to a walkway that is located between the seat and the rear side of the vehicle and is designed to allow access to more rearward seating positions.

S4.1.4.2.1 Any rear outboard designated seating position with a seat that can be adjusted to be forward-facing and to face some other direction shall either:

(i) Meet the requirements of S4.1.4.2 with the seat in any position in which it can be occupied while the vehicle is in motion; or

(ii) When the seat is in its forward-facing position, have a Type 2 seat belt assembly with an upper torso restraint that conforms to S7.1 and S7.2 of this standard and that adjusts by means of an emergency locking retractor that conforms with Standard No. 209 (49 CFR 571.209), which upper torso restraint may be detachable at the buckle, and, when the seat is in any position in which it can be occupied while the vehicle is in motion, have a Type 1 seat belt or the pelvic portion of a Type 2 seat belt assembly that conforms to S7.1 and S7.2 of this standard.

S4.1.4.2.2 Any rear outboard designated seating position on a readily removable seat (that is, a seat designed to be easily removed and replaced by means installed by the manufacturer for that purpose) in a vehicle manufactured on or after September 1, 1992 shall meet the requirements of S4.1.4.2 and may use an upper torso belt that detaches at either its upper or lower anchorage points, but *not* both anchorage points, to meet those requirements. The means for detaching the upper torso belt may use a pushbutton action.

S4.1.5 *Passenger cars manufactured on or after September 1, 1996.*

S4.1.5.1 *Frontal/angular automatic protection system.*

(a) Each passenger car manufactured on or after September 1, 1996 shall:

(1) At each front outboard designated seating position meet the frontal crash protection requirements of S5.1 by means that require no action by vehicle occupants;

(2) At any front designated seating positions that are not "outboard designated seating positions," as that term is defined at 49 CFR 571.3, and at any rear designated seating positions that are not "rear outboard designated seating positions," as that term is defined at S4.1.4.2(c) of this standard, have a Type 1 or Type 2 seat belt assembly that conforms to Standard No. 209 and S7.1 and S7.2 of this standard; and

(3) At each front designated seating position that is an "outboard designated seating position," as that term is defined at 49 CFR 571.3, and at each forward-facing rear designated seating position that is a "rear outboard designated seating positions," as that term is defined at S4.1.4.2(c) of this standard, have a Type 2 seat belt assembly that conforms to Standard No. 209 and S7.1 through S7.3 of this standard, and, in the case of the Type 2 seat belt assemblies installed at the front outboard designated seating positions, meet the frontal crash protection requirements with the appropriate anthropomorphic test dummy restrained by the Type 2 seat belt assembly in addition to the means that requires no action by the vehicle occupant.

(b) For the purposes of sections S4.1.5 through S4.1.5.3 and S4.2.6 through S4.2.6.2 of this standard, an *inflatable restraint system* means an air bag that is activated in a crash.

S4.1.5.2 *Passenger cars manufactured on or after September 1, 1996 and before September 1, 1997.*

S4.1.5.2.1 The amount of passenger cars complying with the requirement of S4.1.5.1(a)(1) by means of an inflatable restraint system at the driver's and right front passenger's position shall be not less than 95 percent of the

manufacturer's total production of passenger cars manufactured on or after September 1, 1996, and before September 1, 1997. A vehicle shall not be deemed to be in noncompliance with this standard if its manufacturer establishes that it did not have reason to know in the exercise of due care that such vehicle is not in conformity with the requirement of this standard.

S4.1.5.2.2 Passenger cars produced by more than one manufacturer.

S4.1.5.2.2.1 For the purpose of calculating the production of passenger cars by each manufacturer during the period specified in S4.1.5.2, a passenger car produced by more than one manufacturer shall be attributed to a single manufacturer as follows, subject to S4.1.5.2.2.2:

(a) A passenger car that is imported into the United States shall be attributed to the importer.

(b) A passenger car manufactured within the United States by more than one manufacturer, one of which also markets the vehicle, shall be attributed to the manufacturer that markets the vehicle.

S4.1.5.2.2.2 A passenger car produced by more than one manufacturer shall be attributed to any one of the vehicle's manufacturers, as specified in an express written contract, reported to the National Highway Traffic Safety Administration pursuant to part 585 of this chapter, between the manufacturer so specified and the manufacturer to which the vehicle otherwise would be attributed, pursuant to S4.1.5.2.2.1.

S4.1.5.3 Passenger cars manufactured on or after September 1, 1997. Each passenger car manufactured on or after September 1, 1997 shall comply with the requirement of S4.1.5.1(a)(1) by means of an inflatable restraint system at the driver's and right front passenger's position. A vehicle shall not be deemed to be in noncompliance with this standard if its manufacturer establishes that it did not have reason to know in the exercise of due care that such vehicle is not in conformity with the requirement of this standard.

S4.2 Trucks and multipurpose passenger vehicles with a GVWR of 10,000 pounds or less. As used in this section, *vehicles manufactured for operation by persons with disabilities* means vehicles

that incorporate a level change device (e.g., a wheelchair lift or a ramp) for onloading or offloading an occupant in a wheelchair, an interior element of design intended to provide the vertical clearance necessary to permit a person in a wheelchair to move between the lift or ramp and the driver's position or to occupy that position, and either an adaptive control or special driver seating accommodation to enable persons who have limited use of their arms or legs to operate a vehicle. For purposes of this definition, special driver seating accommodations include a driver's seat easily removable with means installed for that purpose or with simple tools, or a driver's seat with extended adjustment capability to allow a person to easily transfer from a wheelchair to the driver's seat.

S4.2.1 Trucks and multipurpose passenger vehicles with a GVWR of 10,000 pounds or less, manufactured on or after January 1, 1976 and before September 1, 1991. Each truck and multipurpose passenger vehicle, with a gross vehicle weight rating of 10,000 pounds or less, manufactured before September 1, 1991, shall meet the requirements of S4.1.2.1, or at the option of the manufacturer, S4.1.2.2 or S4.1.2.3 (as specified for passenger cars), except that forward control vehicles manufactured prior to September 1, 1981, convertibles, open-body type vehicles, walk-in van-type trucks, motor homes, vehicles designed to be exclusively sold to the U.S. Postal Service, and vehicles carrying chassis-mount campers may instead meet the requirements of S4.2.1.1 or S4.2.1.2.

S4.2.1.1 First option—complete automatic protection system. The vehicle shall meet the crash protection requirements of S5 by means that require no action by vehicle occupants.

S4.2.1.2 Second option—belt system. The vehicle shall have seat belt assemblies that conform to Standard 209 (49 CFR 571.209) installed as follows:

(a) A Type 1 or Type 2 seat belt assembly shall be installed for each designated seating position in convertibles, open-body type vehicles, and walk-in van-type trucks.

(b) In vehicles manufactured for operation by persons with disabilities, a Type 2 or Type 2A seat belt assembly

shall be installed for the driver's seating position, a Type 2 seat belt assembly shall be installed for each other outboard designated seating position that includes the windshield header within the head impact area, and a Type 1 or Type 2 seat belt assembly shall be installed for each other designated seating position.

(c) In all vehicles except those for which requirements are specified in S4.2.1.2 (a) or (b), a Type 2 seat belt assembly shall be installed for each outboard designated seating position that includes the windshield header within the head impact area, and a Type 1 or Type 2 seat belt assembly shall be installed for each other designated seating position.

S4.2.2 Trucks and multipurpose passenger vehicles with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less, manufactured on or after September 1, 1991 and before September 1, 1997. Except as provided in S4.2.4, each truck and multipurpose passenger vehicle, with a gross vehicle weight rating of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less, manufactured on or after September 1, 1991 and before September 1, 1997, shall meet the requirements of S4.1.2.1, or at the option of the manufacturer, S4.1.2.2 or S4.1.2.3 (as specified for passenger cars), except that convertibles, open-body type vehicles, walk-in van-type trucks, motor homes, vehicles designed to be exclusively sold to the U.S. Postal Service, vehicles carrying chassis-mount campers, and vehicles manufactured for operation by persons with disabilities may instead meet the requirements of S4.2.1.1 or S4.2.1.2. Each Type 2 seat belt assembly installed in a front outboard designated seating position in accordance with S4.1.2.3 shall meet the requirements of S4.6.

S4.2.3 Trucks and multipurpose passenger vehicles manufactured on or after September 1, 1991 with either a GVWR of more than 8,500 pounds but not greater than 10,000 pounds or with an unloaded vehicle weight greater than 5,500 pounds and a GVWR of 10,000 pounds or less. Except as provided in S4.2.4, each truck and multipurpose passenger vehicle manufactured on or after September 1, 1991, that has either a gross vehicle

weight rating which is greater than 8,500 pounds, but not greater than 10,000 pounds, or has an unloaded vehicle weight greater than 5,500 pounds and a GVWR of 10,000 pounds or less, shall meet the requirements of S4.1.2.1, or at the option of the manufacturer, S4.1.2.2 or S4.1.2.3 (as specified for passenger cars), except that convertibles, open-body type vehicles, walk-in van-type trucks, motor homes, vehicles designed to be exclusively sold to the U.S. Postal Service, and vehicles carrying chassis-mount campers may instead meet the requirements of S4.2.1.1 or S4.2.1.2.

S4.2.4 Rear outboard seating positions in trucks and multipurpose passenger vehicles manufactured on or after September 1, 1991 with a GVWR of 10,000 pounds or less. Except as provided in S4.2.4.2 and S4.2.4.3, each truck and each multipurpose passenger vehicle, other than a motor home, manufactured on or after September 1, 1991 that has a gross vehicle weight rating of 10,000 pounds or less shall be equipped with an integral Type 2 seat belt assembly at every forward-facing rear outboard designated seating position. Type 2 seat belt assemblies installed in compliance with this requirement shall comply with Standard No. 209 (49 CFR 571.209) and with S7.1 and S7.2 of this standard. If a Type 2 seat belt assembly installed in compliance with this requirement incorporates any webbing tension-relieving device, the vehicle owner's manual shall include the information specified in S7.4.2(b) of this standard for the tension relieving device, and the vehicle shall comply with S7.4.2(c) of this standard.

S4.2.4.1 As used in this section—

(a) *Motor home* means a motor vehicle with motive power that is designed to provide temporary residential accommodations, as evidenced by the presence of at least four of the following facilities: cooking; refrigeration or ice box; self-contained toilet; heating and/or air conditioning; a potable water supply system including a faucet and a sink; and a separate 110-125 volt electrical power supply and/or an LP gas supply.

(b) *Rear outboard designated seating position* means any "outboard designated seating position" (as that term

is defined at 49 CFR 571.3) that is rearward of the front seat(s), except any designated seating positions adjacent to a walkway located between the seat and the side of the vehicle, which walkway is designed to allow access to more rearward seating positions.

S4.2.4.2 Any rear outboard designated seating position with a seat that can be adjusted to be forward-facing and to face some other direction shall either:

(i) Meet the requirements of S4.2.4 with the seat in any position in which it can be occupied while the vehicle is in motion; or

(ii) When the seat is in its forward-facing position, have a Type 2 seat belt assembly with an upper torso restraint that conforms to S7.1 and S7.2 of this standard and that adjusts by means of an emergency locking retractor that conforms with Standard No. 209 (49 CFR 571.209), which upper torso restraint may be detachable at the buckle, and, when the seat is in any position in which it can be occupied while the vehicle is in motion, have a Type 1 seat belt or the pelvic portion of a Type 2 seat belt assembly that conforms to S7.1 and S7.2 of this standard.

S4.2.4.3 Any rear outboard designated seating position on a readily removable seat (that is, a seat designed to be easily removed and replaced by means installed by the manufacturer for that purpose) in a vehicle manufactured on or after September 1, 1992 shall meet the requirements of S4.2.4 and may use an upper torso belt that detaches at either its upper or lower anchorage point, but not both anchorage points, to meet those requirements. The means for detaching the upper torso belt may use a pushbutton action.

S4.2.5 Trucks, buses, and multipurpose passenger vehicles with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less manufactured on or after September 1, 1994, and before September 1, 1997.

S4.2.5.1 Trucks, buses, and multipurpose passenger vehicles with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less manufactured on or after September 1, 1994, and before September 1, 1995.

S4.2.5.1.1 Subject to S4.2.5.1.2 and S4.2.5.5 and except as provided in S4.2.4,

each truck, bus and multipurpose passenger vehicle, other than walk-in van-type trucks, vehicles designed to be exclusively sold to the U.S. Postal Service, and vehicles manufactured for operation by persons with disabilities, with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less that is manufactured on or after September 1, 1994 and before September 1, 1995, shall comply with the requirements of S4.1.2.1, S4.1.2.2, or S4.1.2.3 (as specified for passenger cars). A vehicle shall not be deemed to be in noncompliance with this standard if its manufacturer establishes that it did not have reason to know in the exercise of due care that such vehicle is not in conformity with the requirement of standard.

S4.2.5.1.2 Subject to S4.2.5.5, the amount of trucks, buses, and multipurpose passenger vehicles specified in S4.2.5.1.1 complying with S4.1.2.1 (as specified for passenger cars) shall be not less than 20 percent of:

(a) The average annual production of trucks, buses, and multipurpose passenger vehicles with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less manufactured on or after September 1, 1991, and before September 1, 1994, by each manufacturer that produced such vehicles during each of those annual production periods, or

(b) The manufacturer's total production of trucks, buses, and multipurpose passenger vehicle with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less during the period specified in S4.2.5.1.1.

S4.2.5.2 Trucks, buses, and multipurpose passenger vehicles with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less manufactured on or after September 1, 1995 and before September 1, 1996.

S4.2.5.2.1 Subject to S4.2.5.2.2 and S4.2.5.5 and except as provided in S4.2.4, each truck, bus, and multipurpose passenger vehicle, other than walk-in van-type trucks, vehicles designed to be exclusively sold to the U.S. Postal Service, and vehicles manufactured for operation by persons with disabilities, with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less that is manufactured on

or after September 1, 1995 and before September 1, 1996, shall comply with the requirements of S4.1.2.1, S4.1.2.2, or S4.1.2.3 (as specified for passenger cars). A vehicle shall not be deemed to be in noncompliance with this standard if its manufacturer establishes that it did not have reason to know in the exercise of due care that such vehicle is not in conformity with the requirement of this standard.

S4.2.5.2.2 Subject to S4.2.5.5, the amount of trucks, buses, and multipurpose passenger vehicles specified in S4.2.5.2.1 complying with S4.1.2.1 (as specified for passenger cars) shall be not less than 50 percent of:

(a) The average annual production of trucks, buses, and multipurpose passenger vehicles with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less manufactured on or after September 1, 1992, and before September 1, 1995, by each manufacturer that produced such vehicles during each of those annual production periods, or

(b) The manufacturer's total production of trucks, buses, and multipurpose passenger vehicles with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less during the period specified in S4.2.5.2.1.

S4.2.5.3 *Trucks, buses, and multipurpose passenger vehicles with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less manufactured on or after September 1, 1996 and before September 1, 1997.*

S4.2.5.3.1 Subject to S4.2.5.3.2 and S4.2.5.5 and except as provided in S4.2.4, each truck, bus, and multipurpose passenger vehicle, other than walk-in van-type trucks, vehicles designed to be exclusively sold to the U.S. Postal Service, and vehicles manufactured for operation by persons with disabilities, with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less that is manufactured on or after September 1, 1996 and before September 1, 1997, shall comply with the requirements of S4.1.2.1, S4.1.2.2, or S4.1.2.3 (as specified for passenger cars). A vehicle shall not be deemed to be in noncompliance with this standard if its manufacturer establishes that it did not have reason to know in the exercise of due care that such vehicle is

not in conformity with the requirement of this standard.

S4.2.5.3.2 Subject to S4.2.5.5, the amount of trucks, buses, and multipurpose passenger vehicles specified in S4.2.5.3.1 complying with S4.1.2.1 (as specified for passenger cars) shall be not less than 90 percent of:

(a) The average annual production of trucks, buses, and multipurpose passenger vehicles with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less manufactured on or after September 1, 1993, and before September 1, 1996, by each manufacturer that produced such vehicles during each of those annual production periods, or

(b) The manufacturer's total production of trucks, buses, and multipurpose passenger vehicles with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less during the period specified in S4.2.5.3.1.

S4.2.5.4 *Alternative phase-in schedule.* A manufacturer may, at its option, comply with the requirements of this section instead of complying with the requirements set forth in S4.2.5.1, S4.2.5.2, and S4.2.5.3.

(a) Except as provided in S4.2.4, each truck, bus, and multipurpose passenger vehicle, other than walk-in van-type trucks, vehicles designed to be exclusively sold to the U.S. Postal Service, and vehicles manufactured for operation by persons with disabilities, with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less that is manufactured on or after September 1, 1994 and before September 1, 1995 shall comply with the requirements of S4.1.2.1, S4.1.2.2, or S4.1.2.3 (as specified for passenger cars).

(b) Except as provided in S4.2.4, each truck, bus, and multipurpose passenger vehicle, other than walk-in van-type trucks, vehicles designed to be exclusively sold to the U.S. Postal Service, and vehicles manufactured for operation by persons with disabilities, with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less that is manufactured on or after September 1, 1995 shall comply with the requirements of S4.1.2.1 (as specified for passenger cars) of this standard. A vehicle shall not be deemed to be in noncompliance with this standard

if its manufacturer establishes that it did not have reason to know in the exercise of due care that such vehicle is not in conformity with the requirement of this standard.

(c) Each truck, bus, and multipurpose passenger vehicle with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less manufactured on or after September 1, 1995, but before September 1, 1998, whose driver's seating position complies with the requirements of S4.1.2.1(a) of this standard by means not including any type of seat belt and whose right front passenger's seating position is equipped with a manual Type 2 seat belt that complies with S5.1 of this standard, with the seat belt assembly adjusted in accordance with S7.4.2, shall be counted as a vehicle complying with S4.1.2.1.

S4.2.5.5 Calculation of complying trucks, buses, and multipurpose passenger vehicles with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less.

(a) For the purposes of the calculations required in S4.2.5.1.2, S4.2.5.2.2, and S4.2.5.3.2 of the number of trucks, buses, and multipurpose passenger vehicles with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less that comply with S4.1.2.1 (as specified for passenger cars):

(1) Each truck, bus, and multipurpose passenger vehicle with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less whose driver's seating position complies with the requirements of S4.1.2.1(a) by means not including any type of seat belt and whose front right seating position complies with the requirements of S4.1.2.1(a) by any means is counted as 1.5 vehicles, and

(2) Each truck, bus, and multipurpose passenger vehicle with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less whose driver's seating position complies with the requirements of S4.1.2.1(a) by means not including any type of seat belt and whose right front passenger's seating position is equipped with a manual Type 2 seat belt that complies with S5.1 of this standard, with the seat belt assembly adjusted in accordance

with S7.4.2, is counted as one vehicle.

(3) Each truck, bus, and multipurpose passenger vehicle with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less that is manufactured in two or more stages or that is altered (within the meaning of §567.7 of this chapter) after having previously been certified in accordance with part 567 of this chapter is not subject to the requirements of S4.2.5.1.2, S4.2.5.2.2, and S4.2.5.3.2. Such vehicles may be excluded from all calculations of compliance with S4.2.5.1.2, S4.2.5.2.2, and S4.2.5.3.2.

(b) For the purposes of complying with S4.2.5.1.2, a truck, bus, or multipurpose passenger vehicle with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less may be counted if it:

(1) Is manufactured on or after September 1, 1992, but before September 1, 1994, and

(2) Is certified as complying with S4.1.2.1 (as specified for passenger cars).

(c) For the purposes of complying with S4.2.5.2.2, a truck, bus, or multipurpose passenger vehicle with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less may be counted if it:

(1) Is manufactured on or after September 1, 1992, but before September 1, 1995,

(2) Is certified as complying with S4.1.2.1 (as specified for passenger cars), and

(3) Is not counted toward compliance with S4.2.5.1.2.

(d) For the purposes of complying with S4.2.5.3.2, a truck, bus, or multipurpose passenger vehicle with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less may be counted if it:

(1) Is manufactured on or after September 1, 1992, but before September 1, 1996,

(2) Is certified as complying with S4.1.2.1 (as specified for passenger cars), and

(3) Is not counted toward compliance with S4.2.5.1.2 or S4.2.5.2.2.

S4.2.5.6 Trucks, buses, and multipurpose passenger vehicles with a GVWR of

8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less produced by more than one manufacturer.

S4.2.5.6.1 For the purposes of calculating average annual production for each manufacturer and the amount of vehicles manufactured by each manufacturer under S4.2.5.1.2, S4.2.5.2.2, or S4.2.5.3.2, a truck, bus, or multipurpose passenger vehicle with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less produced by more than one manufacturer shall be attributed to a single manufacturer as follows, subject to S4.2.5.6.2:

(a) A vehicle that is imported shall be attributed to the importer.

(b) A vehicle that is manufactured in the United States by more than one manufacturer, one of which also markets the vehicle, shall be attributed to the manufacturer that markets the vehicle.

S4.2.5.6.2 A truck, bus, or multipurpose passenger vehicle with, GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less produced by more than one manufacturer shall be attributed to any one of the vehicle's manufacturers specified in an express written contract, reported to the National Highway Traffic Safety Administration under 49 CFR part 585, between the manufacturer so specified and the manufacturer to which the vehicle would otherwise be attributed under S4.2.5.6.1 of this standard.

S4.2.6 *Trucks, buses, and multipurpose passenger vehicles with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less manufactured on or after September 1, 1997.* Each truck, bus, and multipurpose passenger vehicle with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less, which is manufactured on or after September 1, 1997, shall comply with the requirements of S4.1.5.1 of this standard (as specified for passenger cars), except that walk-in van-type trucks and vehicles designed to be sold exclusively to the U.S. Postal Service may meet the requirements of S4.2.1.1 or S4.2.1.2 of this standard instead of the requirements of S4.1.5.1.

S4.2.6.1 *Trucks, buses, and multipurpose passenger vehicles with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less manu-*

factured on or after September 1, 1997 and before September 1, 1998.

S4.2.6.1.1 The amount of trucks, buses, and multipurpose passenger vehicles complying with the requirements of S4.1.5.1(a)(1) of this standard by means of an inflatable restraint system shall be not less than 80 percent of the manufacturer's total combined production of subject vehicles manufactured on or after September 1, 1997 and before September 1, 1998. Each truck, bus, or multipurpose passenger vehicle with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less manufactured on or after September 1, 1997 and before September 1, 1998, whose driver's seating position complies with S4.1.5.1(a)(1) by means of an inflatable restraint system and whose right front passenger's seating position is equipped with a manual Type 2 seat belt assembly that complies with S5.1 of this standard, with the seat belt assembly adjusted in accordance with S7.4.2 of this standard, shall be counted as a vehicle complying with S4.1.5.1(a)(1) by means of an inflatable restraint system. A vehicle shall not be deemed to be in non-compliance with this standard if its manufacturer establishes that it did not have reason to know in the exercise of due care that such vehicle is not in conformity with the requirement of this standard.

S4.2.6.1.2 *Trucks, buses, and multipurpose passenger vehicles with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less produced by more than one manufacturer.*

S4.2.6.1.2.1 For the purpose of calculating the production by each manufacturer during the period specified in S4.2.6.1.1, a truck, bus, or multipurpose passenger vehicle with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less produced by more than one manufacturer shall be attributed to a single manufacturer as follows, subject to S4.2.6.1.2.2:

(a) A vehicle that is imported into the United States shall be attributed to the importer.

(b) A vehicle manufactured within the United States by more than one manufacturer, one of which also markets the vehicle, shall be attributed to

the manufacturer that markets the vehicle.

S4.2.6.1.2.2 A truck, bus, or multipurpose passenger vehicle produced by more than one manufacturer shall be attributed to any one of the vehicle's manufacturers, as specified in an express written contract, reported to the National Highway Traffic Safety Administration pursuant to part 585 of this chapter, between the manufacturer so specified and the manufacturer to which the vehicle otherwise would be attributed, pursuant to S4.2.6.1.2.1.

S4.2.6.2 *Trucks, buses, and multipurpose passenger vehicles with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less manufactured on or after September 1, 1998.* Each truck, bus, or multipurpose vehicle with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less manufactured on or after September 1, 1998 shall comply with the requirement of S4.1.5.1(a)(1) by means of an inflatable restraint system at the driver's and right front passenger's position. A vehicle shall not be deemed to be in noncompliance with this standard if its manufacturer establishes that it did not have reason to know in the exercise of due care that such vehicle is not in conformity with the requirement of this standard.

S4.3 *Trucks and multipurpose passenger vehicles, with GVWR of more than 10,000 pounds.*

S4.3.1 *Trucks and multipurpose passenger vehicles with a GVWR of more than 10,000 pounds, manufactured in or after January 1, 1972 and before September 1, 1990.* Each truck and multipurpose passenger vehicle with a gross vehicle weight rating of more than 10,000 pounds, manufactured on or after January 1, 1972 and before September 1, 1990, shall meet the requirements of S4.3.1.1 or S4.3.1.2. A protection system that meets the requirements of S4.3.1.1 may be installed at one or more designated seating positions of a vehicle that otherwise meets the requirements of S4.3.1.2.

S4.3.1.1 *First option—complete passenger protection system.* The vehicle shall meet the crash protection requirements of S5 by means that require no action by vehicle occupants.

S4.3.1.2 *Second option—belt system.* The vehicle shall, at each designated seating position, have either a Type 1 or a Type 2 seat belt assembly that conforms to S571.209.

S4.3.2 *Trucks and multipurpose passenger vehicles with a GVWR of more than 10,000 pounds, manufactured on or after September 1, 1990.* Each truck and multipurpose passenger vehicle with a gross vehicle weight rating of more than 10,000 pounds, manufactured on or after September 1, 1990, shall meet the requirements of S4.3.2.1 or S4.3.2.2. A protection system that meets the requirements of S4.3.2.1 may be installed at one or more designated seating positions of a vehicle that otherwise meets the requirements of S4.3.2.2.

S4.3.2.1 *First option—complete passenger protection system.* The vehicle shall meet the crash protection requirements of S5 by means that require no action by vehicle occupants.

S4.3.2.2 *Second option—belt system.* The vehicle shall, at each designated seating position, have either a Type 1 or a Type 2 seat belt assembly that conforms to § 571.209 of this part and S7.2 of this Standard. A Type 1 belt assembly or the pelvic portion of a dual retractor Type 2 belt assembly installed at a front outboard seating position shall include either an emergency locking retractor or an automatic locking retractor. If a seat belt assembly installed at a front outboard seating position includes an automatic locking retractor for the lap belt or the lap belt portion, that seat belt assembly shall comply with the following:

(a) An automatic locking retractor used at a front outboard seating position that has some type of suspension system for the seat shall be attached to the seat structure that moves as the suspension system functions.

(b) The lap belt or lap belt portion of a seat belt assembly equipped with an automatic locking retractor that is installed at a front outboard seating position must allow at least $\frac{3}{4}$ inch, but less than 3 inches, of webbing movement before retracting webbing to the next locking position.

(c) Compliance with S4.3.2.2(b) of this standard is determined as follows:

(1) The seat belt assembly is buckled and the retractor end of the seat belt

assembly is anchored to a horizontal surface. The webbing for the lap belt or lap belt portion of the seat belt assembly is extended to 75 percent of its length and the retractor is locked after the initial adjustment.

(2) A load of 20 pounds is applied to the free end of the lap belt or the lap belt portion of the belt assembly (i.e., the end that is not anchored to the horizontal surface) in the direction away from the retractor. The position of the free end of the belt assembly is recorded.

(3) Within a 30 second period, the 20 pound load is slowly decreased, until the retractor moves to the next locking position. The position of the free end of the belt assembly is recorded again.

(4) The difference between the two positions recorded for the free end of the belt assembly shall be at least $\frac{3}{4}$ inch but less than 3 inches.

S4.4 Buses.

S4.4.1 *Buses manufactured on or after January 1, 1972 and before September 1, 1990.* Each bus manufactured on or after January 1, 1972 and before September 1, 1990, shall meet the requirements of S4.4.1.1 or S4.4.1.2.

S4.4.1.1 *First option—complete passenger protection system—driver only.* The vehicle shall meet the crash protection requirements of S5, with respect to an anthropomorphic test dummy in the driver's designated seating position, by means that require no action by vehicle occupants.

S4.4.1.2 *Second option—belt system—driver only.* The vehicle shall, at the driver's designated seating position, have either a Type 1 or a Type 2 seat belt assembly that conforms to S571.209.

S4.4.2 *Buses manufactured on or after September 1, 1990.* Each bus manufactured on or after September 1, 1990, shall meet the requirements of S4.4.2.1 or S4.4.2.2.

S4.4.2.1 *First option—complete passenger protection system—driver only.* The vehicle shall meet the crash protection requirements of S5, with respect to an anthropomorphic test dummy in the driver's designated seating position, by means that require no action by vehicle occupants.

S4.4.2.2 *Second option—belt system—driver only.* The vehicle shall, at the driver's designated seating position, have either a Type 1 or a Type 2 seat belt assembly that conforms to § 571.209 of this part and S7.2 of this Standard. A Type 1 belt assembly or the pelvic portion of a dual retractor Type 2 belt assembly installed at the driver's seating position shall include either an emergency locking retractor or an automatic locking retractor. If a seat belt assembly installed at the driver's seating position includes an automatic locking retractor for the lap belt or the lap belt portion, that seat belt assembly shall comply with the following:

(a) An automatic locking retractor used at a driver's seating position that has some type of suspension system for the seat shall be attached to the seat structure that moves as the suspension system functions.

(b) The lap belt or lap belt portion of a seat belt assembly equipped with an automatic locking retractor that is installed at the driver's seating position must allow at least $\frac{3}{4}$ inch, but less than 3 inches, of webbing movement before retracting webbing to the next locking position.

(c) Compliance with S4.4.2.2(b) of this standard is determined as follows:

(1) The seat belt assembly is buckled and the retractor end of the seat belt assembly is anchored to a horizontal surface. The webbing for the lap belt or lap belt portion of the seat belt assembly is extended to 75 percent of its length and the retractor is locked after the initial adjustment.

(2) A load of 20 pounds is applied to the free end of the lap belt or the lap belt portion of the belt assembly (i.e., the end that is not anchored to the horizontal surface) in the direction away from the retractor. The position of the free end of the belt assembly is recorded.

(3) Within a 30 second period, the 20 pound load is slowly decreased, until the retractor moves to the next locking position. The position of the free end of the belt assembly is recorded again.

(4) The difference between the two positions recorded for the free end of the belt assembly shall be at least $\frac{3}{4}$ inch but less than 3 inches.

S4.4.3 Buses manufactured on or after September 1, 1991.

S4.4.3.1 Each bus with a gross vehicle weight rating of more than 10,000 pounds shall comply with the requirements S4.4.2.1 or S4.4.2.2.

S4.4.3.2 Except as provided in S4.4.3.2.2 and S4.4.3.2.3, each bus with a gross vehicle weight rating of 10,000 pounds or less, except a school bus, shall be equipped with an integral Type 2 seat belt assembly at the driver's designated seating position and at the front and every rear forward-facing outboard designated seating position, and with a Type 1 or Type 2 seat belt assembly at all other designated seating positions. Type 2 seat belt assemblies installed in compliance with this requirement shall comply with Standard No. 209 (49 CFR 571.209) and with S7.1 and S7.2 of this standard. If a Type 2 seat belt assembly installed in compliance with this requirement incorporates any webbing tension-relieving device, the vehicle owner's manual shall include the information specified in S7.4.2(b) of this standard for the tension relieving device, and the vehicle shall comply with S7.4.2(c) of this standard.

S4.4.3.2.1 As used in this section, a "rear outboard designated position" means any "outboard designated seating position" (as that term is defined at 49 CFR 571.3) that is rearward of the front seat(s), except any designated seating positions adjacent to a walkway located between the seat and the side of the vehicle, which walkway is designed to allow access to more rearward seating positions.

S4.4.3.2.2 Any rear outboard designated seating position with a seat that can be adjusted to be forward-facing and to face some other direction shall either:

(i) Meet the requirements of S4.4.3.2 with the seat in any position in which it can be occupied while the vehicle is in motion; or

(ii) When the seat is in its forward-facing position, have a Type 2 seat belt assembly with an upper torso restraint that conforms to S7.1 and S7.2 of this standard and that adjusts by means of an emergency locking retractor that conforms with Standard No. 209 (49 CFR 571.209), which upper torso re-

straint may be detachable at the buckle, and, when the seat is in any position in which it can be occupied while the vehicle is in motion, have a Type 1 seat belt or the pelvic portion of a Type 2 seat belt assembly that conforms to S7.1 and S7.2 of this standard.

S4.4.3.2.3 Any rear outboard designated seating position on a readily removable seat (that is, a seat designed to be easily removed and replaced by means installed by the manufacturer for that purpose) in a vehicle manufactured on or after September 1, 1992 shall meet the requirements of S4.4.3.2 and may use an upper torso belt that detaches at either its upper or lower anchorage point, but not both anchorage points, to meet those requirements. The means for detaching the upper torso belt may use a pushbutton action.

S4.4.3.3 Each school bus with a gross vehicle weight rating of 10,000 pounds or less shall be equipped with an integral Type 2 seat belt assembly at the driver's designated seating position and at the right front passenger's designated seating position (if any), and with a Type 1 or Type 2 seat belt assembly at all other designated seating positions. Type 2 seat belt assemblies installed in compliance with this requirement shall comply with Standard No. 209 (49 CFR 571.209) and with S7.1 and S7.2 of this standard. The lap belt portion of a Type 2 seat belt assembly installed at the driver's designated seating position and at the right front passenger's designated seating position (if any) shall include either an emergency locking retractor or an automatic locking retractor, which retractor shall not retract webbing to the next locking position until at least $\frac{3}{4}$ inch of webbing has moved into the retractor. In determining whether an automatic locking retractor complies with this requirement, the webbing is extended to 75 percent of its length and the retractor is locked after the initial adjustment. If a Type 2 seat belt assembly installed in compliance with this requirement incorporates any webbing tension-relieving device, the vehicle owner's manual shall include the information specified in S7.4.2(b) of this standard for the tension-relieving

device, and the vehicle shall comply with S7.4.2(c) of this standard.

S4.4.4 Buses with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less manufactured on or after September 1, 1994. Each bus with a GVWR of 8,500 pounds or less and an unloaded vehicle weight of 5,500 pounds or less manufactured on or after September 1, 1984 shall comply with the requirements of S4.2.5 and S4.2.6 of this standard, as applicable, for front seating positions, and with the requirements of S4.4.3.2 or S4.4.3.3 of this standard, as applicable, for all rear seating positions.

S4.5 Other general requirements.

S4.5.1 Labeling and owner's manual information. The labels specified in S4.5.1 (b), (c), and (e) of this standard are not required for vehicles that have a smart passenger air bag meeting the criteria specified in S4.5.5 of this standard.

(a) **Air bag maintenance or replacement information.** If the vehicle manufacturer recommends periodic maintenance or replacement of an inflatable restraint system, as that term is defined in S4.1.5.1(b) of this standard, installed in a vehicle, that vehicle shall be labeled with the recommended schedule for maintenance or replacement. The schedule shall be specified by month and year, or in terms of vehicle mileage, or by intervals measured from the date appearing on the vehicle certification label provided pursuant to 49 CFR part 567. The label shall be permanently affixed to the vehicle within the passenger compartment and lettered in English in block capital and numerals not less than three thirty-seconds of an inch high. This label may be combined with the label required by S4.5.1(b) of this standard to appear on the sun visor. If some regular maintenance or replacement of the inflatable restraint system(s) in a vehicle is recommended by the vehicle manufacturer, the owner's manual shall also set forth the recommended schedule for maintenance or replacement.

(b) **Sun visor warning label.**

(1) **Vehicles manufactured before February 25, 1997.** Each vehicle shall comply with either S4.5.1(b)(1)(i) or S4.5.1(b)(1)(ii), and with S4.5.1(b)(1)(iii). At the manufacturer's option, the vehicle may comply with the requirements

of S4.5.1(b)(2), instead of the requirements of S4.5.1(b)(1).

(i) Each front outboard seating position that provides an inflatable restraint shall have a label permanently affixed to the sun visor for that seating position on either side of the sun visor, at the manufacturer's option. Except as provided in S4.5.1(b)(1)(v), this label shall read:

CAUTION—TO AVOID SERIOUS INJURY:

For maximum safety protection in all types of crashes, you must always wear your safety belt.

Do not install rearward-facing child seats in any front passenger seat position.

Do not sit or lean unnecessarily close to the air bag.

Do not place any objects over the air bag or between the air bag and yourself.

See the owner's manual for further information and explanations.

(ii) If the vehicle is equipped with a cutoff device permitted by S4.5.4 of this standard, each front outboard seating position that provides an inflatable restraint shall have a label permanently affixed to the sun visor for such seating position on either side of the sun visor, at the manufacturer's option. Except as provided in S4.5.1(b)(1)(v), this label shall read:

CAUTION—TO AVOID SERIOUS INJURY:

For maximum safety protection in all types of crashes, you must always wear your safety belt.

Do not install rearward-facing child seats in any front passenger seat position, unless the air bag is off.

Do not sit or lean unnecessarily close to the air bag.

Do not place any objects over the air bag or between the air bag and yourself.

See the owner's manual for further information and explanations.

(iii) The coloring of the label shall contrast with the background of the label.

(iv) If the vehicle does not have an inflatable restraint at any front seating position other than that for the driver, the statement "Do not install rearward-facing child seats in any

front passenger seat position” may be omitted from the label.

(v) At the manufacturer’s option, the word “warning” may replace the word “caution” in the labels specified in S4.5.1(b)(1)(i) and S4.5.1(b)(1)(ii).

(2) *Vehicles manufactured on or after February 25, 1997.* Each vehicle shall have a label permanently affixed to either side of the sun visor, at the manufacturer’s option, at each front outboard seating position that is equipped with an inflatable restraint. The label shall conform in content to the label shown in either Figure 6a or 6b of this standard, as appropriate, and shall comply with the requirements of S4.5.1(b)(2)(i) through S4.5.1(b)(2)(v).

(i) The heading area shall be yellow with the word “warning” and the alert symbol in black.

(ii) The message area shall be white with black text. The message area shall be no less than 30 square cm.

(iii) The pictogram shall be black with a red circle and slash on a white background. The pictogram shall be no less than 30 mm in diameter.

(iv) If the vehicle does not have an inflatable restraint at any front seating position other than that for the driver, the label shown in Figure 6a may be modified by omitting the pictogram and changing the message text to read:

DEATH or SERIOUS INJURY can occur.

- Sit as far back as possible from the air bag.
- ALWAYS use SEAT BELTS and CHILD RESTRAINTS.
- The BACK SEAT is the SAFEST place for children.

(v) If the vehicle does not have a back seat, the label shown in Figure 6a or 6b may be modified by omitting the statement: “The BACK SEAT is the SAFEST place for children.”

(3) Except for the information on an air bag maintenance label placed on the visor pursuant to S4.5.1(a) of this standard, no other information shall appear on the same side of the sun visor to which the sun visor warning label is affixed. Except for the information in an air bag alert label placed on the visor pursuant to S4.5.1(c) of this standard, or in a utility vehicle label that contains the language required by

49 CFR 575.105(c)(1), no other information about air bags or the need to wear seat belts shall appear anywhere on the sun visor.

(c) *Air bag alert label*—(1) Vehicles manufactured before February 25, 1997. If the label required by S4.5.1(b)(1) for a sun visor (other than the sun visor for the driver seating position) is not visible when the sun visor is in the stowed position, an air bag alert label shall be permanently affixed either to that visor so that the label is visible when the visor is in that position or to the cover of the air bag for that seating position, at the option of the manufacturer. An air bag alert label affixed to an air bag cover pursuant to this paragraph shall read “Air Bag. See Sun Visor.” An air bag alert label affixed to a sun visor pursuant to this paragraph shall read “Air Bag. See Other Side.” The color of the label shall contrast with the background of the label. If a manufacturer chooses to comply with the requirements of S4.5.1(b)(2) rather than the requirements of S4.5.1(b)(1), the air bag alert label shall comply with the requirements of S4.5.1(c)(2).

(2) *Vehicles manufactured on or after February 25, 1997.* If the label required by S4.5.1(b)(2) is not visible when the sun visor is in the stowed position, an air bag alert label shall be permanently affixed to that visor so that the label is visible when the visor is in that position. The label shall conform in content to the sun visor label shown in figure 6c of this standard, and shall comply with the requirements of S4.5.1(c)(2)(i) through S4.5.1(c)(2)(iii).

(i) The message area shall be black with yellow text. The message area shall be no less than 20 square cm.

(ii) The pictogram shall be black with a red circle and slash on a white background. The pictogram shall be no less than 20 mm in diameter.

(iii) If the vehicle does not have an inflatable restraint at any front seating position other than that for the driver, the pictogram may be omitted from the label shown in Figure 6c.

(d) At the option of the manufacturer, the requirements in S4.5.1(b) and S4.5.1(c) for labels that are permanently affixed to specified parts of the

vehicle may instead be met by permanent marking or molding of the required information.

(e) *Label on the dash.* Each vehicle manufactured on or after February 25, 1997 that is equipped with an inflatable restraint for the passenger position shall have a label attached to a location on the dashboard or the steering wheel hub that is clearly visible from all front seating positions. The label need not be permanently affixed to the vehicle. This label shall conform in content to the label shown in Figure 7 of this standard, and shall comply with the requirements of S4.5.1(e)(2)(i) through S4.5.1(e)(2)(iv).

(i) The heading area shall be yellow with the word "warning" and the alert symbol in black.

(ii) The message area shall be white with black text. The message area shall be no less than 30 square cm.

(iii) If the vehicle does not have a back seat, the label shown in Figure 7 may be modified by omitting the statement: "The back seat is the safest place for children 12 and under."

(iv) For vehicles manufactured before September 1, 1997, the label shown in Figure 7 may be modified by replacing the word "can" with the word "may" in the statement: "Children can be killed or injured by passenger air bag."

(f) *Information to appear in owner's manual.* The owner's manual for any vehicle equipped with an inflatable restraint system shall include a description of the vehicle's air bag system in an easily understandable format. The owner's manual shall include a statement to the effect that the vehicle is equipped with an air bag and a lap/shoulder belt at one or both front outboard seating positions, and that the air bag is a supplemental restraint at those seating positions. The information shall emphasize that all occupants, including the driver, should always wear their seat belts whether or not an air bag is also provided at their seating position to minimize the risk of severe injury or death in the event of a crash. The owner's manual shall also provide any necessary precautions regarding the proper positioning of occupants, including children, at seating positions equipped with air bags to ensure maximum safety protection for

those occupants. The owner's manual shall also explain that no objects should be placed over or near the air bag on the steering wheel or on the instrument panel, because any such objects could cause harm if the vehicle is in a crash severe enough to cause the air bag to inflate.

S4.5.2 *Readiness indicator.* An occupant protection system that deploys in the event of a crash shall have a monitoring system with a readiness indicator. The indicator shall monitor its own readiness and shall be clearly visible from the driver's designated seating position. If the vehicle is equipped with a single readiness indicator for both a driver and passenger air bag, and if the vehicle is equipped with an on-off switch permitted by S4.5.4 of this standard, the readiness indicator shall monitor the readiness of the driver air bag when the passenger air bag has been deactivated by means of the on-off switch, and shall not illuminate solely because the passenger air bag has been deactivated by the manual on-off switch. A list of the elements of the system being monitored by the indicator shall be included with the information furnished in accordance with S4.5.1 but need not be included on the label.

S4.5.3 *Automatic belts.* Except as provided in S4.5.3.1, a seat belt assembly that requires no action by vehicle occupants (hereinafter referred to as an "automatic belt") may be used to meet the crash protection requirements of any option under S4. and in place of any seat belt assembly otherwise required by that option.

S4.5.3.1. An automatic belt that provides only pelvic restraint may not be used pursuant to S4.5.3 to meet the requirements of an option that requires a Type 2 seat belt assembly. An automatic belt may not be used pursuant to S4.5.3 to meet the requirements of S4.1.5.1(a)(3) for a Type 2 seat belt assembly at any seating position equipped with an inflatable restraint system pursuant to S4.1.5.2, S4.1.5.3, S4.2.6.1, or S4.2.6.2 of this standard.

S4.5.3.2 An automatic belt, furnished pursuant to S4.5.3, that provides both pelvic and upper torso restraint

may have either a detachable or non-detachable upper torso portion, notwithstanding provisions of the option under which it is furnished.

S4.5.3.3 An automatic belt furnished pursuant to S4.5.3 shall:

(a) Conform to S7.1 and have a single emergency release mechanism whose components are readily accessible to a seated occupant.

(b) In place of a warning system that conforms to S7.3 of this standard, be equipped with the following warning system: At the left front designated seating position (driver's position), a warning system that activates a continuous or intermittent audible signal for a period of not less than 4 seconds and not more than 8 seconds and that activates a continuous or flashing warning light visible to the driver for not less than 60 seconds (beginning when the vehicle ignition switch is moved to the "on" or the "start" position) when condition (A) exists simultaneously with condition (B), and that activates a continuous or flashing warning light, visible to the driver, displaying the identifying symbol for the seat belt telltale shown in Table 2 of Standard No. 101 (49 CFR 571.101), or, at the option of the manufacturer if permitted by Standard No. 101, displaying the words "Fasten Seat Belts" or "Fasten Belts," for as long as condition (A) exists simultaneously with condition (C).

(A) The vehicle's ignition switch is moved to the "on" position or to the "start" position.

(B) The driver's automatic belt is not in use, as determined by the belt latch mechanism not being fastened, or, if the automatic belt is non-detachable, by the emergency release mechanism being in the released position. In the case of motorized automatic belts, the determination of use shall be made once the belt webbing is in its locked protective mode at the anchorage point.

(C) The belt webbing of a motorized automatic belt system is not in its locked, protective mode at the anchorage point.

S4.5.3.4 An automatic belt furnished pursuant to S4.5.3 that is not required to meet the perpendicular frontal crash protection requirements of S5.1 shall

conform to the webbing, attachment hardware, and assembly performance requirements of Standard No. 209.

S4.5.3.5 A replacement automatic belt shall meet the requirements of S4.1(k) of Standard No. 209.

S4.5.4 *Passenger Air Bag Manual On-Off Switch.* Passenger cars, trucks, buses, and multipurpose passenger vehicles manufactured before September 1, 2000 may be equipped with a device that deactivates the air bag installed at the right front passenger position in the vehicle, if all the conditions in S4.5.4.1 through 4.5.4.4 are satisfied.

S4.5.4.1 The vehicle complies with either S4.5.4.1(a) or S4.5.4.1(b).

(a) The vehicle has no forward-facing designated seating positions to the rear of the front seating positions.

(b) With the seats and seat backs adjusted as specified in S8.1.2 and S8.1.3, the distance, measured along a longitudinal horizontal line tangent to the highest point of the rear seat bottom in the longitudinal vertical plane described in either S4.5.4.1(b)(1) or S4.5.4.1(b)(2), between the rearward surface of the front seat back and the forward surface of the rear seat back is less than 720 millimeters.

(1) In a vehicle equipped with front bucket seats, the vertical plane at the centerline of the driver's seat cushion.

(2) In a vehicle equipped with front bench seating, the vertical plane which passes through the center of the steering wheel rim.

S4.5.4.2 The device is operable by means of the ignition key for the vehicle. The device shall be separate from the ignition switch for the vehicle, so that the driver must take some action with the ignition key other than inserting it or turning it in the ignition switch to deactivate the passenger air bag. Once deactivated, the passenger air bag shall remain deactivated until it is reactivated by means of the device.

S4.5.4.3 A telltale light on the dashboard shall be clearly visible from all front seating positions and shall be illuminated whenever the passenger air bag is deactivated. The telltale:

(a) Shall be yellow;

(b) Shall have the identifying words "AIR BAG OFF" on the telltale or within 25 millimeters of the telltale;

(c) Shall remain illuminated for the entire time that the passenger air bag is deactivated;

(d) Shall not be illuminated at any time when the passenger air bag is not deactivated; and,

(e) Shall not be combined with the readiness indicator required by S4.5.2 of this standard.

S4.5.4.4 The vehicle owner's manual shall provide, in a readily understandable format:

(a) Complete instructions on the operation of the on-off switch;

(b) A statement that the on-off switch should only be used when a member of a passenger risk group identified in the request form in Appendix B to part 595 of this chapter is occupying the right front passenger seating position; and,

(c) A warning about the safety consequences of using the on-off switch at other times.

S4.5.5 *Smart passenger air bags.* For purposes of this standard, a smart passenger air bag is a passenger air bag that:

(a) Provides an automatic means to ensure that the air bag does not deploy when a child seat or child with a total mass of 30 kg or less is present on the front outboard passenger seat, or

(b) Incorporates sensors, other than or in addition to weight sensors, which automatically prevent the air bag from deploying in situations in which it might have an adverse effect on infants in rear-facing child seats, and unbelted or improperly belted children, or

(c) Is designed to deploy in a manner that does not create a risk of serious injury to infants in rear-facing child seats, and unbelted or improperly belted children.

S4.6 *Dynamic testing of manual belt systems.*

S4.6.1 Each truck and multipurpose passenger vehicle with a GVWR of 8,500 pounds or less and an unloaded weight of less than 5,500 pounds that is manufactured on or after September 1, 1991, and is equipped with a Type 2 seat belt assembly at a front outboard designated seating position pursuant to S4.1.2.3 shall meet the frontal crash protection requirements of S5.1 at those designated seating positions with a test dummy restrained by a Type 2

seat belt assembly that has been adjusted in accordance with S7.4.2. A vehicle shall not be deemed to be in non-compliance with this standard if its manufacturer establishes that it did not have reason to know in the exercise of due care that such vehicle is not in conformity with the requirement of this standard.

S4.6.2 Any manual seat belt assembly subject to the requirements of S5.1 of this standard by virtue of any provision of this standard other than S4.1.2.1(c)(2) does not have to meet the requirements of S4.2(a)–(f) and S4.4 of Standard No. 209 (§ 571.209).

S4.6.3 Any manual seat belt assembly subject to the requirements of S5.1 of this standard by virtue of S4.1.2.1(c)(2) does not have to meet the elongation requirements of S4.2(c), S4.4(a)(2), S4.4(b)(4), and S4.4(b)(5) of Standard No. 209 (§ 571.209).

S5. *Occupant crash protection requirements.*

S5.1 *Frontal barrier crash test.* Impact a vehicle traveling longitudinally forward at any speed, up to and including 30 mph, into a fixed collision barrier that is perpendicular to the line of travel of the vehicle, or at any angle up to 30 degrees in either direction from the perpendicular to the line of travel of the vehicle under the applicable conditions of S8. The test dummy specified in S8.1.8 placed in each front outboard designated seating position shall meet the injury criteria of S6.1, S6.2, S6.3, S6.4, and S6.5 of this standard.

S5.2 *Lateral moving barrier crash test.* Impact a vehicle laterally on either side by a barrier moving at 20 mph under the applicable conditions of S8. The test dummy specified in S8.1.8 positioned in the front outboard designated seating position adjacent to the impacted side shall meet the injury criteria of S6.2 and S6.3 of this standard.

S5.3 *Rollover.* Subject a vehicle to a rollover test in either lateral direction at 30 mph under the applicable conditions of S8 of this standard with a test dummy specified in S8.1.8 placed in the front outboard designated seating position on the vehicle's lower side as mounted on the test platform. The test dummy shall meet the injury criteria of S6.1 of this standard.

S6 *Injury criteria for the part 572, subpart E, Hybrid III test dummy.*

S6.1 All portions of the test dummy shall be contained within the outer surfaces of the vehicle passenger compartment throughout the test.

S6.2 The resultant acceleration at the center of gravity of the head shall be such that the expression:

$$\text{HIC} = \left[\frac{1}{(t_2 - t_1)} \int_{t_1}^{t_2} a dt \right]^{2.5} (t_2 - t_1)$$

shall not exceed 1,000 where a is the resultant acceleration expressed as a multiple of g (the acceleration of gravity), and t_1 and t_2 are any two points in time during the crash of the vehicle which are separated by not more than a 36 millisecond time interval.

S6.3 The resultant acceleration calculated from the output of the thoracic instrumentation shown in drawing 78051.218, revision R incorporated by reference in part 572, subpart E of this chapter shall not exceed 60 g 's, except for intervals whose cumulative duration is not more than 3 milliseconds.

S6.4 Compression deflection of the sternum relative to the spine, as determined by instrumentation shown in drawing 78051-317, revision A incorporated by reference in part 572, subpart E of this chapter, shall not exceed 3 inches.

S6.5 The force transmitted axially through each upper leg shall not exceed 2250 pounds.

S7. *Seat belt assembly requirements.* As used in this section, a law enforcement vehicle means any vehicle manufactured primarily for use by the United States or by a State or local government for police or other law enforcement purposes.

S7.1 *Adjustment.*

S7.1.1 Except as specified in S7.1.1.1 and S7.1.1.2, the lap belt of any seat belt assembly furnished in accordance with S4.1.2 shall adjust by means of any emergency-locking or automatic-locking retractor that conforms to § 571.209 to fit persons whose dimensions range from those of a 50th percentile 6-year-old child to those of a 95th percentile adult male and the upper torso restraint shall adjust by means of an emergency-locking retractor

or a manual adjusting device that conforms to § 571.209 to fit persons whose dimensions range from those of a 5th percentile adult female to those of a 95th percentile adult male, with the seat in any position, the seat back in the manufacturer's nominal design riding position, and any adjustable anchorages adjusted to the manufacturer's nominal design position for a 50th percentile adult male occupant. However, an upper torso restraint furnished in accordance with S4.1.2.3.1(a) shall adjust by means of an emergency-locking retractor that conforms to § 571.209.

S7.1.1.1 A seat belt assembly installed at the driver's seating position shall adjust to fit persons whose dimensions range from those of a 5th-percentile adult female to those of a 95th-percentile adult male.

S7.1.1.2 (a) A seat belt assembly installed in a motor vehicle other than a forward control vehicle at any designated seating position other than the outboard positions of the front and second seats shall adjust either by a retractor as specified in S7.1.1 or by a manual adjusting device that conforms to § 571.209.

(b) A seat belt assembly installed in a forward control vehicle at any designated seating position other than the front outboard seating positions shall adjust either by a retractor as specified in S7.1.1 or by a manual adjusting device that conforms to § 571.209.

(c) A seat belt assembly installed in a forward-facing rear outboard seating position in a law enforcement vehicle shall adjust either by a retractor as specified in S7.1.1 or by a manual adjusting device that conforms to § 571.209.

S7.1.1.3 A Type 1 lap belt or the lap belt portion of any Type 2 seat belt assembly installed at any forward-facing outboard designated seating position of a vehicle with a gross vehicle weight rating of 10,000 pounds or less to comply with a requirement of this standard, except walk-in van-type vehicles and school buses, and except in rear seating positions in law enforcement vehicles, shall meet the requirements of S7.1 by means of an emergency locking retractor that conforms to Standard No. 209 (49 CFR 571.209).

S7.1.1.4 Notwithstanding the other provisions of S7.1—S7.1.1.3, emergency-locking retractors on belt assemblies located in positions other than front outboard designated seating positions may be equipped with a manual webbing adjustment device capable of causing the retractor that adjusts the lap belt to lock when the belt is buckled.

S7.1.1.5 Passenger cars, and trucks, buses, and multipurpose passenger vehicles with a GVWR of 10,000 pounds or less manufactured on or after September 1, 1995 shall meet the requirements of S7.1.1.5(a), S7.1.1.5(b) and S7.1.1.5(c).

(a) Each designated seating position, except the driver's position, and except any right front seating position that is equipped with an automatic belt, that is in any motor vehicle, except walk-in van-type vehicles and vehicles manufactured to be sold exclusively to the U.S. Postal Service, and that is forward-facing or can be adjusted to be forward-facing, shall have a seat belt assembly whose lap belt portion is lockable so that the seat belt assembly can be used to tightly secure a child restraint system. The means provided to lock the lap belt or lap belt portion of the seat belt assembly shall not consist of any device that must be attached by the vehicle user to the seat belt webbing, retractor, or any other part of the vehicle. Additionally, the means provided to lock the lap belt or lap belt portion of the seat belt assembly shall not require any inverting, twisting or otherwise deforming of the belt webbing.

(b) If the means provided pursuant to S7.1.1.5(a) to lock the lap belt or lap belt portion of any seat belt assembly makes it necessary for the vehicle user to take some action to activate the locking feature, the vehicle owner's manual shall include a description in words and/or diagrams describing how to activate the locking feature so that the seat belt assembly can tightly secure a child restraint system and how to deactivate the locking feature to remove the child restraint system.

(c) Except for seat belt assemblies that have no retractor or that are equipped with an automatic locking retractor, compliance with S7.1.1.5(a) is

demonstrated by the following procedure:

(1) With the seat in any adjustment position, buckle the seat belt assembly. Complete any procedures recommended in the vehicle owner's manual, pursuant to S7.1.1.5(b), to activate any locking feature for the seat belt assembly.

(2) Locate a reference point A on the safety belt buckle. Locate a reference point B on the attachment hardware or retractor assembly at the other end of the lap belt or lap belt portion of the seat belt assembly. Adjust the lap belt or lap belt portion of the seat belt assembly pursuant to S7.1.1.5(c)(1) as necessary so that the webbing between points A and B is at the maximum length allowed by the belt system. Measure and record the distance between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly.

(3) Readjust the belt system so that the webbing between points A and B is at any length that is 5 inches or more shorter than the maximum length of the webbing.

(4) Apply a pre-load of 10 pounds, using the webbing tension pull device described in Figure 5 of this standard, to the lap belt or lap belt portion of the seat belt assembly in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position whose belt system is being tested. Apply the pre-load in a horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal. Measure and record the length of belt between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly while the pre-load is being applied.

(5) Apply a load of 50 pounds, using the webbing tension pull device described in Figure 5 of this standard, to the lap belt or lap belt portion of the seat belt assembly in a vertical plane parallel to the longitudinal axis of the vehicle and passing through the seating reference point of the designated seating position whose belt system is being tested. The load is applied in a

horizontal direction toward the front of the vehicle with a force application angle of not less than 5 degrees nor more than 15 degrees above the horizontal at an onset rate of not more than 50 pounds per second. Attain the 50 pound load in not more than 5 seconds. If webbing sensitive emergency locking retroactive are installed as part of the lap belt assembly or lap belt portion of the seat belt assembly, apply the load at a rate less than the threshold value for lock-up specified by the manufacturer. Maintain the 50 pound load for at least 5 seconds before the measurements specified in S7.1.1.5(c)(6) are obtained and recorded.

(6) Measure and record the length of belt between points A and B along the longitudinal centerline of the webbing for the lap belt or lap belt portion of the seat belt assembly.

(7) The difference between the measurements recorded under S7.1.1.5(c)(6) and (4) shall not exceed 2 inches.

(8) The difference between the measurements recorded under S7.1.1.5(c)(6) and (2) shall be 3 inches or more.

S7.1.2 Except as provided in S7.1.2.1, S7.1.2.2, and S7.1.2.3, for each Type 2 seat belt assembly which is required by Standard No. 208 (49 CFR 571.208), the upper anchorage, or the lower anchorage nearest the intersection of the torso belt and the lap belt, shall include a movable component which has a minimum of two adjustment positions. The distance between the geometric center of the movable component at the two extreme adjustment positions shall be not less than five centimeters, measured linearly. If the component required by this paragraph must be manually moved between adjustment positions, information shall be provided in the owner's manual to explain how to adjust the seat belt and warn that misadjustment could reduce the effectiveness of the safety belt in a crash.

S7.1.2.1 As an alternative to meeting the requirement of S7.1.2, a Type 2 seat belt assembly shall provide a means of automatically moving the webbing in relation to either the upper anchorage, or the lower anchorage nearest the intersection of the torso belt and the lap belt. The distance between the midpoint of the webbing at the contact point of the webbing and the anchorage at the extreme adjustment positions shall be not less than five centimeters, measured linearly.

S7.1.2.2 The requirements of S7.1.2 do not apply the anchorages of a Type 2 seat belt assembly installed:

(a) At a seat which is adjustable fore and aft while the vehicle is in motion and whose seat frame above the fore-and-aft adjuster is part of each of the assembly's seat belt anchorages, as defined in S3 of Standard No. 210 (49 CFR 571.210).

(b) At a seat that is not adjustable fore and aft while the vehicle is in motion.

S7.1.2.3 The requirements of S7.1.2 do not apply to any truck with a gross vehicle weight rating of more than 8,500 pounds manufactured before January 1, 1998.

S7.1.3 The intersection of the upper torso belt with the lap belt in any Type 2 seat belt assembly furnished in accordance with S4.1.1 or S4.1.2, with the upper torso manual adjusting device, if provided, adjusted in accordance with the manufacturer's instructions, shall be at least 6 inches from the front vertical centerline of a 50th-percentile adult male occupant, measured along the centerline of the lap belt, with the seat in its rearmost and lowest adjustable position and with the seat back in the manufacturer's nominal design riding position.

S7.1.4 The weights and dimensions of the vehicle occupants referred to in this standard are as follows:

	50th-percentile 6-year old child	5th-percentile adult female	50th-percentile adult male	95th-percentile adult male
Weight	47.3 pounds	102 pounds	164 pounds ± 3	215 pounds.
Erect sitting height	25.4 inches	30.9 inches	35.7 inches ± 1	38 inches.
Hip breadth (sitting)	8.4 inches	12.8 inches	14.7 inches ± 7	16.5 inches.
Hip circumference (sitting)	23.9 inches	36.4 inches	42 inches	47.2 inches.
Waist circumference (sitting)	20.8 inches	23.6 inches	32 inches ± 6	42.5 inches.
Chest depth .....	.....	7.5 inches	9.3 inches ± 2	10.5 inches.
Chest circumference: (nipple) .....	.....	30.5 inches .....	.....	.....

	50th-percentile 6-year old child	5th-percentile adult female	50th-percentile adult male	95th-percentile adult male
(upper)	29.8 inches	37.4 inches±.6	44.5 inches.
(lower)	26.6 inches .....	.....	.....

S7.2 Latch mechanism. Except as provided in S7.2(e), each seat belt assembly installed in any vehicle shall have a latch mechanism that complies with the requirements specified in S7.2(a) through (d).

(a) The components of the latch mechanism shall be accessible to a seated occupant in both the stowed and operational positions;

(b) The latch mechanism shall release both the upper torso restraint and the lap belt simultaneously, if the assembly has a lap belt and an upper torso restraint that require unlatching for release of the occupant;

(c) The latch mechanism shall release at a single point; and;

(d) The latch mechanism shall release by a pushbutton action.

(e) The requirements of S7.2 do not apply to any automatic belt assembly. The requirements specified in S7.2(a) through (c) do not apply to any safety belt assembly installed at a forward-facing rear outboard seating position in a law enforcement vehicle.

S7.3 (a) A seat belt assembly provided at the driver's seating position shall be equipped with a warning system that, at the option of the manufacturer, either—

(1) Activates a continuous or intermittent audible signal for a period of not less than 4 seconds and not more than 8 seconds and that activates a continuous or flashing warning light visible to the driver displaying the identifying symbol for the seat belt telltale shown in Table 2 of FMVSS 101 or, at the option of the manufacturer if permitted by FMVSS 101, displaying the words "Fasten Seat Belts" or "Fasten Belts", for not less than 60 seconds (beginning when the vehicle ignition switch is moved to the "on" or the "start" position) when condition (b) exists simultaneously with condition (c), or that

(2) Activates, for a period of not less than 4 seconds and not more than 8 seconds (beginning when the vehicle ignition switch is moved to the "on" or the

"start" position), a continuous or flashing warning light visible to the driver, displaying the identifying symbol of the seat belt telltale shown in Table 2 of FMVSS 101 or, at the option of the manufacturer if permitted by FMVSS 101, displaying the words "Fasten Seat Belts" or "Fasten Belts", when condition (b) exists, and a continuous or intermittent audible signal when condition (b) exists simultaneously with condition (c).

(b) The vehicle's ignition switch is moved to the "on" position or to the "start" position.

(c) The driver's lap belt is not in use, as determined, at the option of the manufacturer, either by the belt latch mechanism not being fastened, or by the belt not being extended at least 4 inches from its stowed position.

S7.4 Seat belt comfort and convenience.

(a) **Automatic seat belts.** Automatic seat belts installed in any vehicle, other than walk-in van-type vehicles, which has a gross vehicle weight rating of 10,000 pounds or less, and which is manufactured on or after September 1, 1986, shall meet the requirements of S7.4.1, S7.4.2, and S7.4.3.

(b) **Manual seat belts.**

(1) **Vehicles manufactured after September 1, 1986.** Manual seat belts installed in any vehicle, other than manual Type 2 belt systems installed in the front outboard seating positions in passenger cars or manual belts in walk-in van-type vehicles, which have a gross vehicle weight rating of 10,000 pounds or less, shall meet the requirements of S7.4.3, S7.4.4, S7.4.5, and S7.4.6.

(2) **Vehicles manufactured after September 1, 1989.**

(i) If the automatic restraint requirement of S4.1.4 is rescinded pursuant to S4.1.5, then manual seat belts installed in a passenger car shall meet the requirements of S7.1.1.3(a), S7.4.2, S7.4.3, S7.4.4, S7.4.5, and S7.4.6.

(ii) Manual seat belts installed in a bus, multipurpose passenger vehicle and truck with a gross vehicle weight

rating of 10,000 pounds or less, except for walk-in van-type vehicles, shall meet the requirements of S7.4.3, S7.4.4, S7.4.5, and S7.4.6.

S7.4.1 Convenience hooks. Any manual convenience hook or other device that is provided to stow seat belt webbing to facilitate entering or exiting the vehicle shall automatically release the webbing when the automatic belt system is otherwise operational and shall remain in the released mode for as long as (a) exists simultaneously with (b), or, at the manufacturer's option, for as long as (a) exists simultaneously with (c)—

(a) The vehicle ignition switch is moved to the “on” or “start” position;

(b) The vehicle's drive train is engaged;

(c) The vehicle's parking brake is in the released mode (nonengaged).

S7.4.2 Webbing tension-relieving device. Each vehicle with an automatic seat belt assembly or with a Type 2 manual seat belt assembly that must meet the occupant crash protection requirements of S5.1 of this standard installed at a front outboard designated seating position, and each vehicle with a Type 2 manual seat belt assembly installed at a rear outboard designated seating position in compliance with a requirement of this standard, that has either automatic or manual tension-relieving devices permitting the introduction of slack in the webbing of the shoulder belt (e.g., “comfort clips” or “window-shade” devices) shall:

(a) Comply with the requirements of S5.1 with the shoulder belt webbing adjusted to introduce the maximum amount of slack recommended by the vehicle manufacturer pursuant to S7.4.2(b).

(b) Have a section in the vehicle owner's manual that explains how the tension-relieving device works and specifies the maximum amount of slack (in inches) recommended by the vehicle manufacturer to be introduced into the shoulder belt under normal use conditions. The explanation shall also warn that introducing slack beyond the amount specified by the manufacturer could significantly reduce the effectiveness of the shoulder belt in a crash; and

(c) Have, except for open-body vehicles with no doors, an automatic means to cancel any shoulder belt slack introduced into the belt system by a tension-relieving device. In the case of an automatic safety belt system, cancellation of the tension-relieving device shall occur each time the adjacent vehicle door is opened. In the case of a manual seat belt required to meet S5.1, cancellation of the tension-relieving device shall occur, at the manufacturer's option, either each time the adjacent door is opened or each time the latchplate is released from the buckle. In the case of a Type 2 manual seat belt assembly installed at a rear outboard designated seating position, cancellation of the tension-relieving device shall occur, at the manufacturer's option either each time the door designed to allow the occupant of that seating position entry and egress of the vehicle is opened or each time the latchplate is released from the buckle. In the case of open-body vehicles with no doors, cancellation of the tension-relieving device may be done by a manual means.

S7.4.3 Belt contact force. Except for manual or automatic seat belt assemblies that incorporate a webbing tension-relieving device, the upper torso webbing of any seat belt assembly shall not exert more than 0.7 pounds of contact force when measured normal to and one inch from the chest of an anthropomorphic test dummy, positioned in accordance with S10 of this standard in the seating position for which that seat belt assembly is provided, at the point where the centerline of the torso belt crosses the midsagittal line on the dummy's chest.

S7.4.4 Latchplate access. Any seat belt assembly latchplate that is located outboard of a front outboard seating position in accordance with S4.1.2 shall also be located within the outboard reach envelope of either the outboard arm or the inboard arm described in S10.7 and Figure 3 of this standard, when the latchplate is in its normal stowed position and any adjustable anchorages are adjusted to the manufacturer's nominal design position for a 50th percentile adult male occupant. There shall be sufficient clearance between the vehicle seat and

the side of the vehicle interior to allow the test block defined in Figure 4 of this standard unhindered transit to the latchplate or buckle.

S7.4.5 Retraction. When tested under the conditions of S8.1.2 and S8.1.3, with anthropomorphic dummies whose arms have been removed and which are positioned in accordance with S10 of this standard in the front outboard seating positions and restrained by the belt systems for those positions, the torso and lap belt webbing of any of those seat belt systems shall automatically retract to a stowed position either when the adjacent vehicle door is in the open position and the seat belt latchplate is released, or, at the option of the manufacturer, when the latchplate is released. That stowed position shall prevent any part of the webbing or hardware from being pinched when the adjacent vehicle door is closed. A belt system with a tension-relieving device in an open-bodied vehicle with no doors shall fully retract when the tension-relieving device is deactivated. For the purposes of these retraction requirements, outboard armrests, which are capable of being stowed, on vehicle seats shall be placed in their stowed position.

S7.4.6 Seat belt guides and hardware.

S7.4.6.1 (a) Any manual seat belt assembly whose webbing is designed to pass through the seat cushion or between the seat cushion and seat back shall be designed to maintain one of the following three seat belt parts (the seat belt latchplate, the buckle, or the seat belt webbing) on top of or above the seat cushion under normal conditions (i.e., conditions other than when belt hardware is intentionally pushed behind the seat by a vehicle occupant). In addition, the remaining two seat belt parts must be accessible under normal conditions.

(b) The requirements of S7.4.6.1(a) do not apply to: (1) seats whose seat cushions are movable so that the seat back serves a function other than seating, (2) seats which are removable, or (3) seats which are movable so that the space formerly occupied by the seat can be used for a secondary function.

S7.4.6.2 The buckle and latchplate of a manual seat belt assembly subject to S7.4.6.1 shall not pass through the

guides or conduits provided for in S7.4.6.1 and fall behind the seat when the events listed below occur in the order specified: (a) The belt is completely retracted or, if the belt is non-retractable, the belt is unlatched; (b) the seat is moved to any position to which it is designed to be adjusted; and (c) the seat back, if foldable, is folded forward as far as possible and then moved backward into position. The in-board receptacle end of a seat belt assembly installed at a front outboard designated seating position shall be accessible with the center arm rest in any position to which it can be adjusted (without having to move the armrest).

S8. Test conditions.

S8.1 General conditions. The following conditions apply to the frontal, lateral, and rollover tests. Except for S8.1.1(d), the following conditions apply to the alternative unbelted sled test set forth in S13 from March 19, 1997 until September 1, 2001.

S8.1.1 Except as provided in paragraph (c) of S8.1.1, the vehicle, including test devices and instrumentation, is loaded as follows:

(a) *Passenger cars.* A passenger car is loaded to its unloaded vehicle weight plus its rated cargo and luggage capacity weight, secured in the luggage area, plus the weight of the necessary anthropomorphic test devices.

(b) *Multipurpose passenger vehicles, trucks, and buses.* A multipurpose passenger vehicle, truck, or bus is loaded to its unloaded vehicle weight plus 300 pounds or its rated cargo and luggage capacity weight, whichever is less, secured in the load carrying area and distributed as nearly as possible in proportion to its gross axle weight ratings, plus the weight of the necessary anthropomorphic test devices. For the purposes of § 8.1.1, unloaded vehicle weight does not include the weight of work-performing accessories. Vehicles are tested to a maximum unloaded vehicle weight of 5,500 pounds.

(c) *Fuel system capacity.* With the test vehicle on a level surface, pump the fuel from the vehicle's fuel tank and then operate the engine until it stops. Then, add Stoddard solvent to the test vehicle's fuel tank in an amount which is equal to not less than 92 and not

more than 94 percent of the fuel tank's usable capacity stated by the vehicle's manufacturer. In addition, add the amount of Stoddard solvent needed to fill the entire fuel system from the fuel tank through the engine's induction system.

(d) *Vehicle test attitude.* Determine the distance between a level surface and a standard reference point on the test vehicle's body, directly above each wheel opening, when the vehicle is in its "as delivered" condition. The "as delivered" condition is the vehicle as received at the test site, with 100 percent of all fluid capacities and all tires inflated to the manufacturer's specifications as listed on the vehicle's tire placard. Determine the distance between the same level surface and the same standard reference points in the vehicle's "fully loaded condition." The "fully loaded condition" is the test vehicle loaded in accordance with S8.1.1 (a) or (b), as applicable. The load placed in the cargo area shall be center over the longitudinal centerline of the vehicle. The pretest vehicle attitude shall be equal to either the as delivered or fully loaded attitude or between the as delivered attitude and the fully loaded attitude.

S8.1.2 Adjustable seats are in the adjustment position midway between the forwardmost and rearmost positions, and if separately adjustable in a vertical direction, are at the lowest position. If an adjustment position does not exist midway between the forwardmost and rearmost positions, the closest adjustment position to the rear of the midpoint is used.

S8.1.3 Place adjustable seat backs in the manufacturer's nominal design riding position in the manner specified by the manufacturer. Place any adjustable anchorages at the manufacturer's nominal design position for a 50th percentile adult male occupant. Place each adjustable head restraint in its highest adjustment position. Adjustable lumbar supports are positioned so that the lumbar support is in its lowest adjustment position.

S8.1.4 Adjustable steering controls are adjusted so that the steering wheel hub is at the geometric center of the locus it describes when it is moved

through its full range of driving positions.

S8.1.5 Movable vehicle windows and vents are, at the manufacturer's option, placed in the fully closed position.

S8.1.6 Convertibles and open-body type vehicles have the top, if any, in place in the closed passenger compartment configuration.

S8.1.7 Doors are fully closed and latched but not locked.

S8.1.8 *Anthropomorphic test dummies.*

S8.1.8.1 The anthropomorphic test dummies used for evaluation of occupant protection systems manufactured pursuant to applicable portions of S4.1.2, S4.1.3, and S4.1.4 of this standard shall conform to the requirements of subpart E of part 572 of this chapter.

S8.1.8.2 Each test dummy is clothed in formfitting cotton stretch garments with short sleeves and midcalf length pants specified in drawings 78051-292 and 78051-293 incorporated by reference in part 572, subpart E of this chapter, respectively or their equivalents. A size 11EE shoe specified in drawings 78051-294 (left) and 78051-295 (right) incorporated by reference in part 572, subpart E of this chapter, or its equivalent is placed on each foot of the test dummy.

S8.1.8.3 Limb joints are set at 1g, barely restraining the weight of the limb when extended horizontally. Leg joints are adjusted with the torso in the supine position.

S8.1.8.4 Instrumentation does not affect the motion of the dummies during impact or rollover.

S8.1.8.5 The stabilized test temperature of the test dummy is at any temperature level between 69 degrees F and 72 degrees F, inclusive.

S8.2 *Lateral moving barrier crash test conditions.* The following conditions apply to the lateral moving barrier crash test.

S8.2.1 The moving barrier, including the impact surface, supporting structure, and carriage, weighs 4,000 pounds.

S8.2.2 The impact surface of the barrier is a vertical, rigid, flat rectangle, 78 inches wide and 60 inches high, perpendicular to its direction of movement, with its lower edge horizontal and 5 inches above the ground surface.

S8.2.3 During the entire impact sequence the barrier undergoes no significant amount of dynamic or static deformation, and absorbs no significant portion of the energy resulting from the impact, except for energy that results in translational rebound movement of the barrier.

S8.2.4 During the entire impact sequence the barrier is guided so that it travels in a straight line, with no significant lateral, vertical or rotational movement.

S8.2.5 The concrete surface upon which the vehicle is tested is level, rigid and of uniform construction, with a skid number of 75 when measured in accordance with American Society for Testing and Materials Method E-274-65T at 40 m.p.h., omitting water delivery as specified in paragraph 7.1 of that method.

S8.2.6 The tested vehicle's brakes are disengaged and the transmission is in neutral.

S8.2.7 The barrier and the test vehicle are positioned so that at impact—

- (a) The vehicle is at rest in its normal attitude;
- (b) The barrier is traveling in a direction perpendicular to the longitudinal axis of the vehicle at 20 m.p.h.; and
- (c) A vertical plane through the geometric center of the barrier impact surface and perpendicular to that sur-

face passes through the driver's seating reference point in the tested vehicle.

S8.3 *Rollover test conditions.* The following conditions apply to the rollover test.

S8.3.1 The tested vehicle's brakes are disengaged and the transmission is in neutral.

S8.3.2 The concrete surface on which the test is conducted is level, rigid, of uniform construction, and of a sufficient size that the vehicle remains on it throughout the entire rollover cycle. It has a skid number of 75 when measured in accordance with American Society for Testing and Materials Method E-274-65T at 40 m.p.h. omitting water delivery as specified in paragraph 7.1 of that method.

S8.3.3 The vehicle is placed on a device, similar to that illustrated in Figure 2, having a platform in the form of a flat, rigid plane at an angle of 23° from the horizontal. At the lower edge of the platform is an unyielding flange, perpendicular to the platform with a height of 4 inches and a length sufficient to hold in place the tires that rest against it. The intersection of the inner face of the flange with the upper face of the platform is 9 inches above the rollover surface. No other restraints are used to hold the vehicle in position during the deceleration of the platform and the departure of the vehicle.

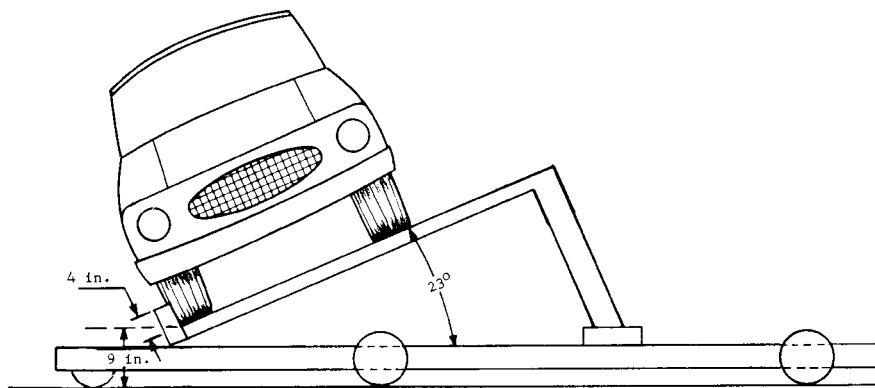


FIGURE 2 - TYPICAL DEVICE FOR ROLLOVER TEST

S8.3.4 With the vehicle on the test platform, the test devices remain as nearly as possible in the posture specified in S8.1.

S8.3.5 Before the deceleration pulse, the platform is moving horizontally, and perpendicularly to the longitudinal axis of the vehicle, at a constant speed of 30 m.p.h. for a sufficient period of time for the vehicle to become motionless relative to the platform.

S8.3.6 The platform is decelerated from 30 to 0 m.p.h. in a distance of not more than 3 feet, without change of direction and without transverse or rotational movement during the deceleration of the platform and the departure of the vehicle. The deceleration rate is at least 20g for a minimum of 0.04 seconds.

S8.4 *Frontal test condition.* If the vehicle is equipped with a cutoff device permitted by S4.5.4 of this standard, the device is deactivated.

S9. *Pressure vessels and explosive devices.*

S9.1 *Pressure vessels.* A pressure vessel that is continuously pressurized shall conform to the requirements of §§ 178.65–2, 178.65–6(b), 178.65–7, 178.65–9 (a) and (b), and 178.65–10 of this title. It shall not leak or evidence visible distortion when tested in accordance with § 178.65–11(a) of this title and shall not fail in any of the ways enumerated in § 178.65–11(b) of this title when hydrostatically tested to destruction. It shall not crack when flattened in accordance with § 178.65–12(a) of this title to the limit specified in § 178.65–12(a)(4) of this title.

S9.2 *Explosive devices.* An explosive device shall not exhibit any of the characteristics prohibited by § 173.51 of this title. All explosive material shall be enclosed in a structure that is capable of containing the explosive energy without sudden release of pressure except through overpressure relief devices or parts designed to release the pressure during actuation.

S10. *Test dummy positioning procedures.*

S10.1 *Head.* The transverse instrumentation platform of the head shall be level within ½ degree. To level the head of the test dummy, the following sequences must be followed. First, adjust the position of the H point within

the limits set forth in S10.4.2.1 to level the transverse instrumentation platform of the head of the test dummy. If the transverse instrumentation platform of the head is still not level, then adjust the pelvic angle of the test dummy within the limits specified in S10.4.2.2 of this standard. If the transverse instrumentation platform of the head is still not level, then adjust the neck bracket of the dummy the minimum amount necessary from the non-adjusted “0” setting to ensure that the transverse instrumentation platform of the head is horizontal within ½ degree. The test dummy shall remain within the limits specified in S10.4.2.1 and S10.4.2.2. after any adjustment of the neck bracket.

S10.2 *Upper Arms.*

S10.2.1 The driver’s upper arms shall be adjacent to the torso with the centerlines as close to a vertical plane as possible.

S10.2.2 The passenger’s upper arms shall be in contact with the seat back and the sides of the torso.

S10.3 *Hands.*

S10.3.1 The palms of the drivers test dummy shall be in contact with the outer part of the steering wheel rim at the rim’s horizontal centerline. The thumbs shall be over the steering wheel rim and shall be lightly taped to the steering wheel rim so that if the hand of the test dummy is pushed upward by a force of not less than 2 pounds and not more than 5 pounds, the tape shall release the hand from the steering wheel rim.

S10.3.2 The palms of the passenger test dummy shall be in contact with the outside of the thigh. The little finger shall be in contact with the seat cushion.

S10.4 *Torso.*

S10.4.1 *Upper Torso.*

S10.4.1.1 In vehicles equipped with bench seats, the upper torso of the driver and passenger test dummies shall rest against the seat back. The midsagittal plane of the driver dummy shall be vertical and parallel to the vehicle’s longitudinal centerline, and pass through the center of the steering wheel rim. The midsagittal plane of the passenger dummy shall be vertical and parallel to the vehicle’s longitudinal centerline and the same distance from

the vehicle's longitudinal centerline as the midsagittal plane of the driver dummy.

S10.4.1.2 In vehicles equipped with bucket seats, the upper torso of the driver and passenger test dummies shall rest against the seat back. The midsagittal plane of the driver and the passenger dummy shall be vertical and shall coincide with the longitudinal centerline of the bucket seat.

S10.4.2 *Lower Torso.*

S10.4.2.1 *H-point.* The H-points of the driver and passenger test dummies shall coincide within ½ inch in the vertical dimension and ½ inch in the horizontal dimension of a point ¼ inch below the position of the H-point determined by using the equipment and procedures specified in SAE J826 (APR 1980) except that the length of the lower leg and thigh segments of the H-point machine shall be adjusted to 16.3 and 15.8 inches, respectively, instead of the 50th percentile values specified in Table 1 of SAE J826.

S10.4.2.2 *Pelvic angle.* As determined using the pelvic angle gage (GM drawing 78051-532, incorporated by reference in part 572, subpart E of this chapter) which is inserted into the H-point gaging hole of the dummy, the angle measured from the horizontal on the three inch flat surface of the gage shall be 22½ degrees plus or minus 2½ degrees.

S10.5 *Legs.* The upper legs of the driver and passenger test dummies shall rest against the seat cushion to the extent permitted by placement of the feet. The initial distance between the outboard knee clevis flange surfaces shall be 10.6 inches. To the extent practicable, the left leg of the driver dummy and both legs of the passenger dummy shall be in vertical longitudinal planes. To the extent practicable, the right leg of the driver dummy shall be in a vertical plane. Final adjustment of feet in accordance with S10.6 for various passenger compartment configurations is permitted.

S10.6 *Feet.*

S10.6.1 *Driver's position.*

S10.6.1.1 Rest the right foot of the test dummy on the undepressed accelerator pedal with the rearmost point of the heel on the floor pan in the plane of

the pedal. If the foot cannot be placed on the accelerator pedal, set it initially perpendicular to the lower leg and place it as far forward as possible in the direction of the pedal centerline with the rearmost point of the heel resting on the floor pan.

S10.6.1.2 Place the left foot on the toeboard with the rearmost point of the heel resting on the floor pan as close as possible to the point of intersection of the planes described by the toeboard and the floor pan and not on the wheelwell projection. If the foot cannot be positioned on the toeboard, set it initially perpendicular to the lower leg and place it as far forward as possible with the heel resting on the floor pan. If necessary to avoid contact with the vehicle's brake or clutch pedal, rotate the test dummy's left foot about the lower leg. If there is still pedal interference, rotate the left leg outboard about the hip the minimum distance necessary to avoid the pedal interference. For vehicles with a foot rest that does not elevate the left foot above the level of the right foot, place the left foot on the foot rest so that the upper and lower leg centerlines fall in a vertical plane.

S10.6.2 *Passenger's position.*

S10.6.2.1 *Vehicles with a flat floor pan/toeboard.* Place the right and left feet on the vehicle's toeboard with the heels resting on the floor pan as close as possible to the intersection point with the toeboard. If the feet cannot be placed flat on the toeboard, set them perpendicular to the lower leg centerlines and place them as far forward as possible with the heels resting on the floor pan.

S10.6.2.2 *Vehicles with wheelhouse projections in passenger compartment.* Place the right and left feet in the well of the floor pan/toeboard and not on the wheelhouse projection. If the feet cannot be placed flat on the toeboard, initially set them perpendicular to the lower leg centerlines and then place them as far forward as possible with the heels resting on the floor pan.

S10.7 *Test dummy positioning for latchplate access.* The reach envelopes specified in S7.4.4 of this standard are obtained by positioning a test dummy in the driver's or passenger's seating

position and adjusting that seating position to its forwardmost adjustment position. Attach the lines for the inboard and outboard arms to the test dummy as described in Figure 3 of this standard. Extend each line backward and outboard to generate the compliance arcs of the outboard reach envelope of the test dummy's arms.

S10.8 *Test dummy positioning for belt contact force.* To determine compliance with S7.4.3 of this standard, position the test dummy in the vehicle in accordance with S10.1 through S10.6 of this standard and adjust the seating position in accordance with S8.1.2 and S8.1.3 of this standard. Pull the belt webbing three inches from the test dummy's chest and release until the webbing is within one inch of the test dummy's chest and measure the belt contact force.

S10.9 *Manual belt adjustment for dynamic testing.* With the test dummy po-

sitioned in accordance with S10.1 through S10.6 of this standard and the seating position adjusted in accordance with S8.1.2 and S8.1.3 of this standard, place the Type 2 manual belt around the test dummy and fasten the latch. Remove all slack from the lap belt portion. Pull the upper torso webbing out of the retractor and allow it to retract; repeat this four times. Apply a 2 to 4 pound tension load to the lap belt. If the belt system is equipped with a tension-relieving device, introduce the maximum amount of slack into the upper torso belt that is recommended by the vehicle manufacturer in the vehicle's owner's manual. If the belt system is not equipped with a tension-relieving device, allow the excess webbing in the upper torso belt to be retracted by the retractive force of the retractor.

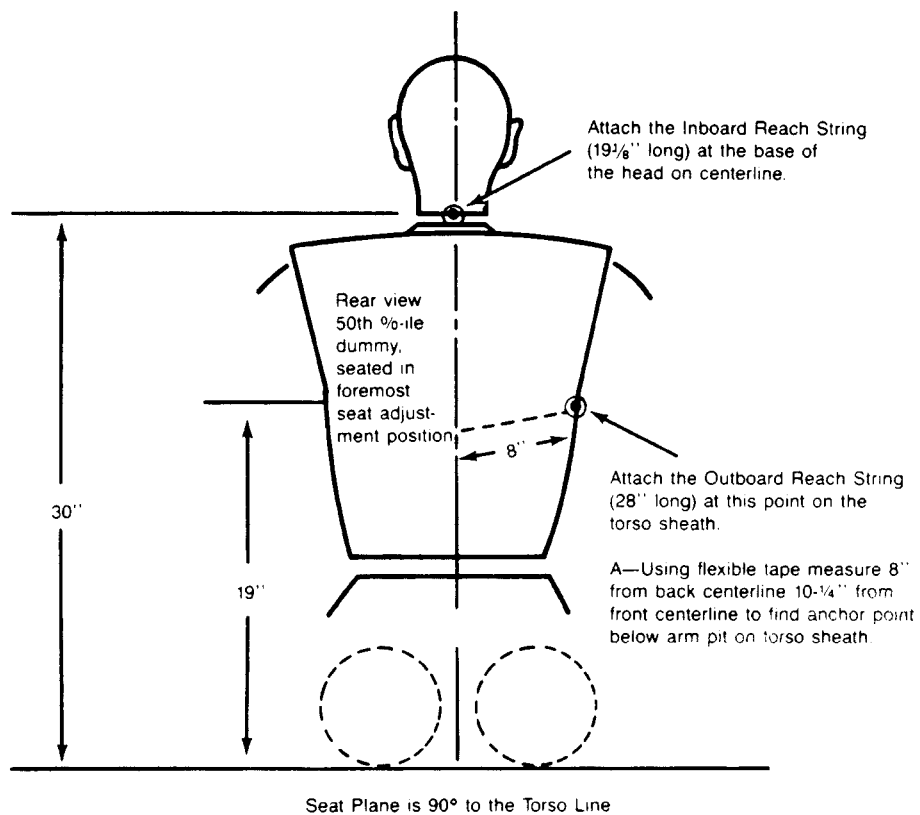


Figure 3. Location of Anchoring Points for Latchplate Reach Limiting Chains or Strings to Test for Latchplate Accessibility Using Subpart E Test Device

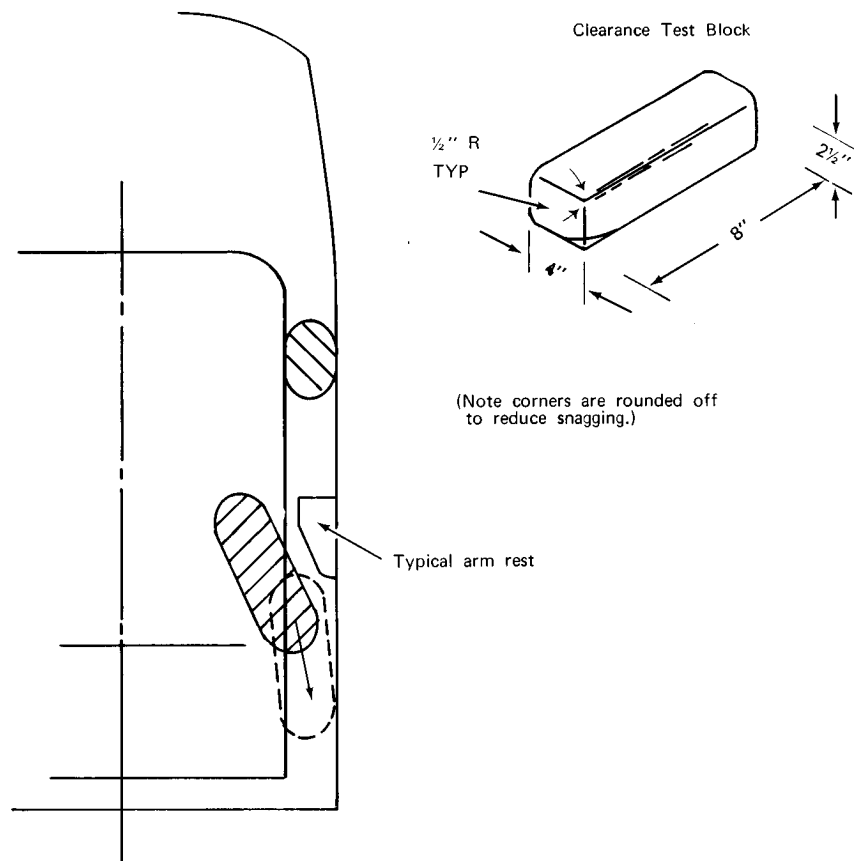


Figure 4—USE OF CLEARANCE TEST BLOCK TO DETERMINE HAND/ARM ACCESS

S11. [Reserved]

S12. *Temporary Exemption from Requirement for Inflatable Restraint System.*

S12.1 *Scope.* This section establishes procedures for filing and processing applications for temporary exemption from the requirements in this standard that vehicles be equipped with inflatable restraint systems.

S12.2 *Definitions.*

Line means a name that a manufacturer applies to a group of motor vehicles of the same make which have the same body or chassis, or otherwise are similar in construction or design. A *line* may, for example, include 2-door, 4-

door, station wagon, and hatchback vehicles of the same make.

S12.3 *Standard of review.* In order to receive a temporary exemption from the inflatable restraint requirement, a vehicle manufacturer must demonstrate in its application that there has been a disruption in the supply of one or more inflatable restraint system components, or a disruption in the use and installation by the manufacturer of any such component due to unavoidable events not under the control of the manufacturer, which will prevent a

manufacturer from meeting its anticipated production volume of vehicles with inflatable restraint systems.

S12.4 Exemption applications—General requirements. Each application for a temporary exemption from the inflatable restraint requirements must—

(a) Be written in the English language;

(b) Be submitted in three copies to: Administrator, National Highway Traffic Safety Administration, 400 Seventh Street, SW., Washington, DC 20590;

(c) State the full name and address of the manufacturer, the nature of its organization (individual, partnership, corporation, etc.), and the name of the State or country under the laws of which it is organized;

(d) Identify the motor vehicle line or lines for which the temporary exemption is being sought;

(e) Set forth in full the data, views, and arguments of the manufacturer that would support granting the temporary exemption, including the specific information required by S12.5; and

(f) Specify and segregate any part of the information and data submitted in the application that should be withheld from public disclosure in accordance with part 512 of this chapter.

S12.5 Exemption applications—Specific content requirements. Each application for a temporary exemption from the inflatable restraint requirement must include:

(a) A clear and specific identification of any component in the inflatable restraint system that has become unavailable due to circumstances beyond the manufacturer's control, and a diagram showing the location of such component within the restraint system and within the vehicle;

(b) A clear and specific explanation of the cause or causes of the disruption in the supply of the component, and a showing that such disruption is beyond the control of the manufacturer;

(c) An estimate of the length of time that will be needed to correct the disruption and again incorporate the subject components into current production, or an explanation of why it is not possible to provide such an estimate;

(d) A complete statement of the bases for the manufacturer's belief that NHTSA should grant a temporary ex-

emption in response to this application;

(e) An unconditional statement by the manufacturer that it will recall every vehicle for which a temporary exemption is requested in the application, to install all missing inflatable restraint systems;

(f) A plan setting forth steps the manufacturer will take to ensure that as many exempted vehicles as possible will be returned for installation of missing inflatable restraint systems;

(g) A proposed reasonable period of time after the disruption in the supply of inflatable restraint system components is corrected that the manufacturer estimates will ensure a sufficient quantity of components for both anticipated production and retrofit of those vehicles for which a temporary exemption is requested in the application, so that the vehicle manufacturer can recall those vehicles for which a temporary exemption is requested and install inflatable restraint systems in them, together with a demonstration of why the manufacturer believes this proposed period of time is reasonable for completing this recall, or an explanation of why it is not possible to provide such an estimate;

(h) A proposed date for termination of the exemption;

(i) A proposed date by which all exempted vehicles will have been recalled and had inflatable restraints installed (assuming owners returned their vehicles in a timely matter in response to a first notice by the manufacturer), or an explanation of why it is not possible to provide such an estimate.

S12.6 Processing an application for a temporary exemption. (a) NHTSA will process any application for temporary exemption that contains the information specified in S12.4 and S12.5. If an application fails to provide the information specified in S12.4 and S12.5, NHTSA will not process the application, but will advise the manufacturer of the information that must be provided if the agency is to process the application.

(b) Notice of each application for temporary exemption shall be published in the FEDERAL REGISTER.

(c) NHTSA will issue its decision to grant or deny the requested temporary

exemption not later than 15 days after the agency receives a complete petition, as defined in paragraph (a). However, a failure to issue a decision within this time does not result in a grant of the petition.

(d) Notice of each decision to grant or deny a temporary exemption, and the reasons for granting or denying it, will be published in the FEDERAL REGISTER.

(e) The Administrator may attach such conditions as he or she deems appropriate to a temporary exemption, including but not limited to requiring manufacturers to provide progress reports at specified times (including, as appropriate and to the extent possible, estimate of dates and times concerning when a supply disruption will be corrected and when recall will take place) and requiring manufacturers to take specific steps to ensure that as many exempted vehicles as possible will be returned for installation of missing inflatable restraint systems.

(f) Unless a later effective date is specified in a notice announcing an agency decision to grant a temporary exemption, a temporary exemption from the inflatable restraint requirement will become effective upon the date the decision is issued.

S12.7 Labels and written notice announcing temporary exemption.

S12.7.1 It shall be a condition of every temporary exemption from the inflatable restraint requirement that the manufacturer of exempted vehicles comply with the provisions of S12.7.2 and S12.7.3.

S12.7.2 (a) The manufacturer of any vehicle granted a temporary exemption from the inflatable restraint requirement shall affix a label within the passenger compartment of such vehicle. The label shall set forth the following information in block capital letters and numerals not less than three thirty-seconds of an inch high:

THIS VEHICLE DOES NOT CONTAIN AN AIR BAG IN CONFORMANCE WITH THE FEDERAL MOTOR VEHICLE SAFETY STANDARD FOR OCCUPANT CRASH PROTECTION. IT WAS EXEMPTED PURSUANT TO NHTSA EXEMPTION NO. (insert number assigned by NHTSA).

(b) This label shall not be removed until after the vehicle manufacturer

has recalled the vehicle and installed an inflatable restraint system at those seating positions for which it was granted an exemption.

S12.7.3 The manufacturer of any vehicle that is delivered without an inflatable restraint system, pursuant to a temporary exemption granted under this section, shall, at the time of delivery of the vehicle, provide a written notice to the dealer to whom the vehicle is delivered. The manufacturer shall also provide a written notice by registered mail to the first purchaser of the vehicle for purposes other than resale, within two weeks after purchase. Unless otherwise provided for by the Administrator in the exemption, such notice shall provide the following information:

(a) This vehicle does not conform to Federal Motor Vehicle Safety Standard No. 208, because it is not equipped with an inflatable restraint at (insert the affected seating positions).

(b) The vehicle was allowed to be sold pursuant to NHTSA Exemption No. (insert appropriate exemption number).

(c) The reason this vehicle was exempted from the requirement for an inflatable restraint was because of factors beyond the manufacturer's control.

(d) The manufacturer will recall this vehicle not later than (insert the time set forth in the exemption) and install the missing inflatable restraint at no charge.

(e) If the reader has any questions or would like some further information, he or she may contact the manufacturer at (insert an address and telephone number).

S13. Alternative unbelted test for vehicles manufactured before September 1, 2001.

S13.1 *Instrumentation Impact Test—Part 1—Electronic Instrumentation.* Under the applicable conditions of S8, mount the vehicle on a dynamic test platform at the vehicle attitude set forth in S13.3, so that the longitudinal center line of the vehicle is parallel to the direction of the test platform travel and so that movement between the base of the vehicle and the test platform is prevented. The test platform is instrumented with an accelerometer and data processing system having a

frequency response of 60 channel class as specified in Society of Automotive Engineers (SAE) Recommended Practice J211/1 MAR 95, *Instrumentation for Impact Test—Part 1—Electronic Instrumentation*. SAE J211/1 MAR 95 is incorporated by reference and thereby is made part of this standard. The Director of the Federal Register approved the material incorporated by reference in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. A copy may be obtained from SAE at Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096. A copy of the material may be inspected at NHTSA's Docket Section, 400 Seventh Street, S.W., room 5109, Washington, DC, or at the Office of the Federal Register, 800 North Capitol Street, N.W., Suite 700, Washington, DC. The accelerometer sensitive axis is parallel to the direction of test platform travel. The test is conducted at a velocity change approximating 30 mph with acceleration of the test platform such that all points on the crash pulse curve within the corridor identified in Figure 6 are covered. An inflatable restraint is to be activated at 20 ms \pm 2 ms from the time that 0.5 g is measured on the dynamic test platform. The test dummy specified in S8.1.8.2, placed in each front outboard designated seating position as specified in S11, shall meet the injury criteria of S6.1, S6.2, S6.3, S6.4, S6.5, and S13.2 of this standard.

S13.2 Neck injury criteria. A vehicle certified to this alternative test requirement shall, in addition to meeting the criteria specified in S13.1, meet the following injury criteria for the neck, measured with the six axis load cell (ref. Denton drawing C-1709) that is

mounted between the bottom of the skull and the top of the neck as shown in drawing 78051-218, in the unbelted sled test:

- (a) Flexion Bending Moment—190 Nm. SAE Class 600.
- (b) Extension Bending Moment—57 Nm. SAE Class 600.
- (c) Axial Tension—3300 peak N. SAE Class 1000.
- (d) Axial Compression—4000 peak N. SAE Class 1000.
- (e) Fore-and-Aft Shear—3100 peak N. SAE Class 1000.

S13.3 Vehicle test attitude. When the vehicle is in its "as delivered" condition, measure the angle between the driver's door sill and the horizontal. Mark where the angle is taken on the door sill. The "as delivered" condition is the vehicle as received at the test site, with 100 percent of all fluid capacities and all tires inflated to the manufacturer's specifications as listed on the vehicle's tire placard. When the vehicle is in its "fully loaded" condition, measure the angle between the driver's door sill and the horizontal, at the same place the "as delivered" angle was measured. The "fully loaded" condition is the test vehicle loaded in accordance with S8.1.1(a) or (b) of Standard No. 208, as applicable. The load placed in the cargo area shall be centered over the longitudinal centerline of the vehicle. The pretest door sill angle, when the vehicle is on the sled, (measured at the same location as the as delivered and fully loaded condition) shall be equal to or between the as delivered and fully loaded door sill angle measurements.

S13.4 Tires and wheels. Remove the tires and wheels.

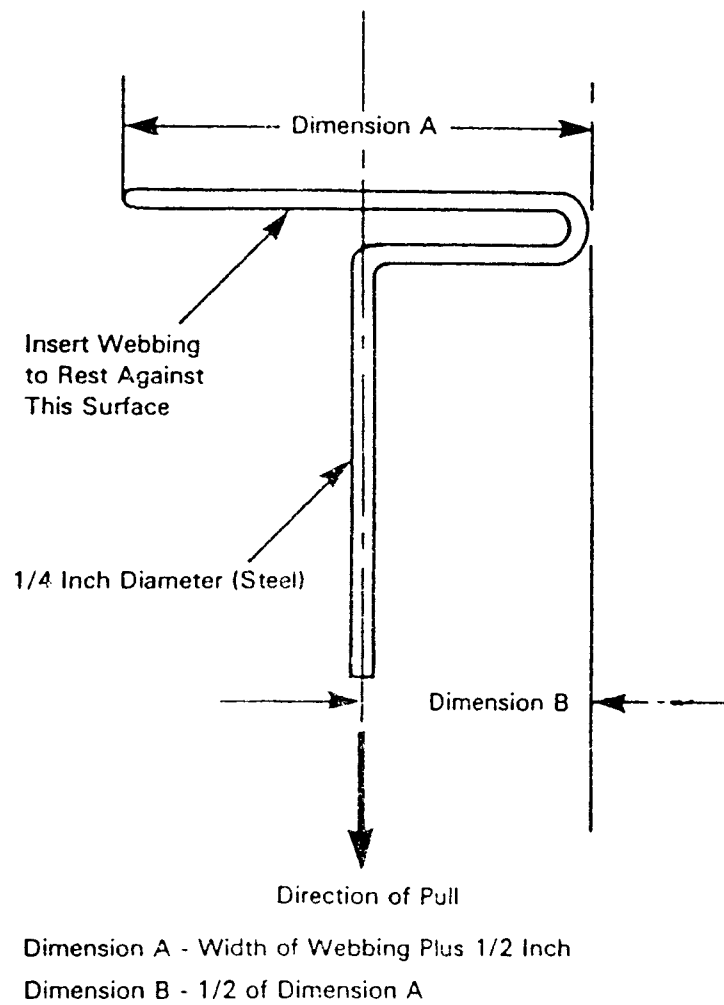
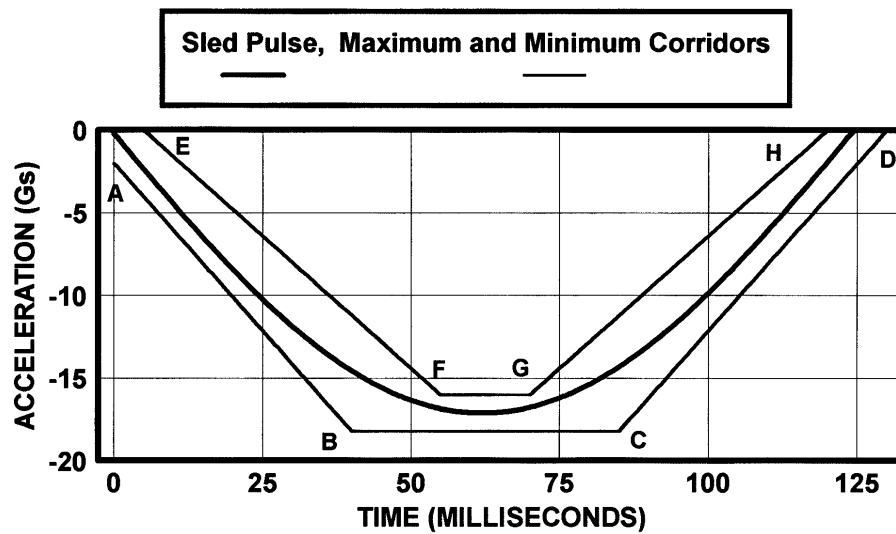


Figure 5. - Webbing Tension Pull Device



Sled pulse acceleration, expressed in G's = $17.2 \sin(\pi t/125)$

for $\Delta V = 30(+0, -2)$ mph

Reference point	t (ms)	Acceleration (G)
A	0	-2
B	40	-18.2
C	85	-18.2
D	130	0
E	5	0
F	55	-16
G	70	-16
H	120	0.00

Figure 6 - Sled Pulse and Coordinates

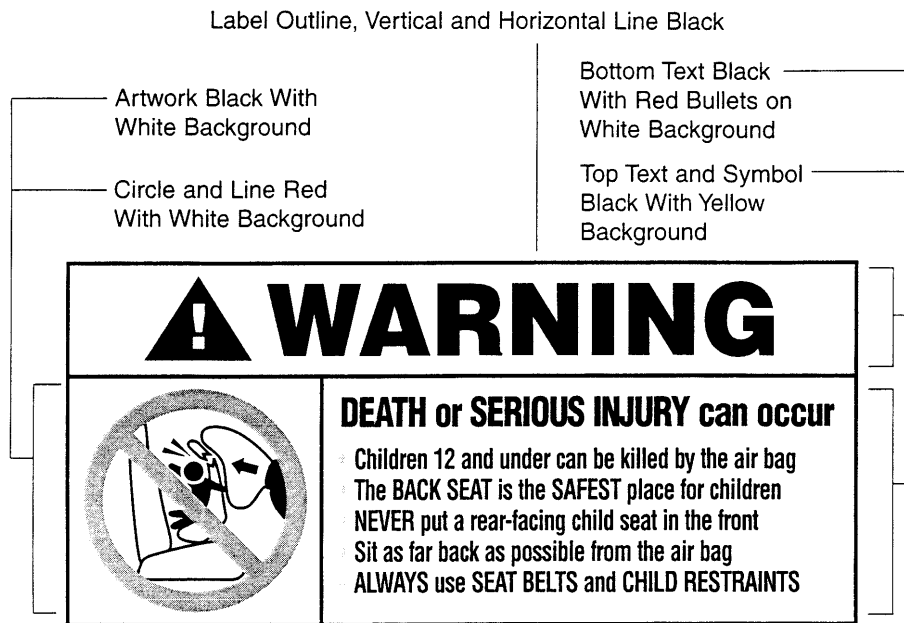


Figure 6a. Sun Visor Label Visible When Visor is in Down Position.

Label Outline, Vertical and Horizontal Line Black

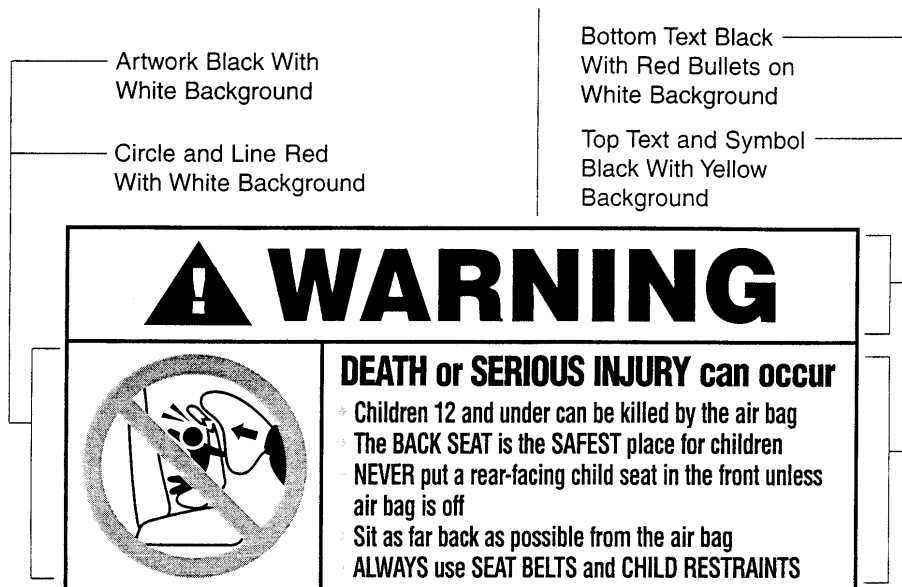


Figure 6b. Sun Visor Label Visible When Visor is in Down Position.

Circle and Line Red
With White Background

Text Yellow With
Black Background

Artwork Black With
White Background



Figure 6c. Sun Visor Label Visible When Visor is in Up Position.

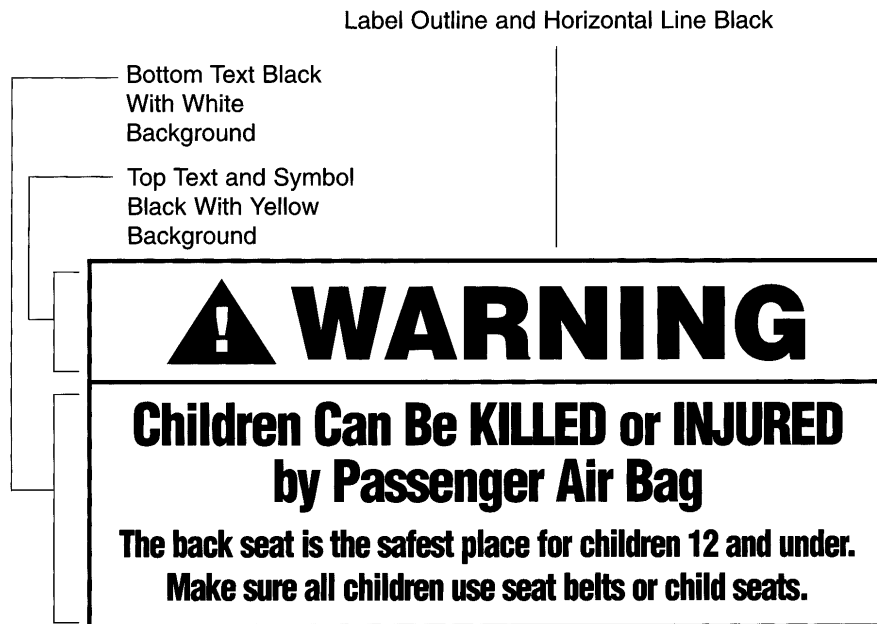


Figure 7. Removable Label on Dash.

[36 FR 22902, Dec. 2, 1971]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting § 571.208, see the List of CFR Sections Affected in the Finding Aids section of this volume.

§ 571.209 Standard No. 209; Seat belt assemblies.

S1. Purpose and scope. This standard specifies requirements for seat belt assemblies.

S2. Application. This standard applies to seat belt assemblies for use in passenger cars, multipurpose passenger vehicles, trucks, and buses.

S3. Definitions. *Adjustment hardware* means any or all hardware designed for adjusting the size of a seat belt assembly to fit the user, including such hardware that may be integral with a buckle, attachment hardware, or retractor.

Attachment hardware means any or all hardware designed for securing the webbing of a seat belt assembly to a motor vehicle.

Automatic-locking retractor means a retractor incorporating adjustment hardware by means of a positive self-locking mechanism which is capable when locked of withstanding restraint forces.

Buckle means a quick release connector which fastens a person in a seat belt assembly.

Emergency-locking retractor means a retractor incorporating adjustment hardware by means of a locking mechanism that is activated by vehicle acceleration, webbing movement relative to the vehicle, or other automatic action during an emergency and is capable when locked of withstanding restraint forces.

Hardware means any metal or rigid plastic part of a seat belt assembly.

Load-limiter means a seat belt assembly component or feature that controls tension on the seat belt to modulate the forces that are imparted to occupants restrained by the belt assembly during a crash.